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This copy is not for sale. It is intended for more than one reader.
PLEASE READ IT AND PASS IT ALONG

Principles of War--Hot or Cold

George Fielding Eliot

A democratic discipline and a democratic consensus do not call for full and continuous agreement. What they require are a rational statement of the alternatives, and a consensus as to the mode of selection among them. A homogeneous training in this kind of policy analysis might contribute to the development of a common language among the various elite sectors, a common method of problem-setting and problem-solving.

—Gabriel A. Almond, *The American People and Foreign Policy*

THE United States is engaged in a war for survival. We call it the cold war. It is a conflict which fully meets Clausewitz' definition of war: "an extension of political intercourse with an admixture of other means." Its stakes are not less because for the time being the guns—or the bombs—are silent.

It is a war fought on four fronts—political, economic, psychological, and military. The enemy's forces on all four fronts are integrated; they are under unified command at all levels; they are informed by a common doctrine, derived from a central philosophy based on accepted principles which serve as guides to decision and action under the ever variant circumstances of the war.

Our forces on these four fronts are integrated only by a series of improvisations. The unified command exists only at the top; elsewhere there is nothing better than attempts at "coordination." No common doctrine, no central philosophy for the conduct of the cold war has been evolved. No principles with any valid application to the cold war's exigencies have been generally accepted.

Perhaps it is hardly to be expected that we should have gotten that far as yet. The Communists had their basic philosophy and their principles when they took over the control of Russia in 1917: they have been evolving and developing their doctrines ever since, single-purposed toward the destruction of our way of life. Not until 30 years later, in 1947, did the United States acknowledge, by the creation of the National Security Council (NSC), that no longer can "appropriate military policy on the one hand, and supportable foreign policy on the other, be formulated in isolation one from the other," according to Mr. Dillon Anderson, lately Special Assistant to the President for National Security Affairs.

US Developing Strategy

In the ensuing nine years a great deal of work has been done toward building "a technique for forward policy formulation well calculated to take into account historical experience, to assess our present risks and commitments, and to seek out sound, long-term policy objectives." The function of the NSC is, of course, advisory; decision rests with the President.

The NSC . . . has become the helm from

The military profession possesses a basic philosophy for conducting wars—cold or hot. To fill the gap between high-level decision and performance in the field, foreign and military policies must be blended

which the President looks out toward the broad horizon ahead and charts the world course we are to follow. . . . There has been accumulated a reservoir of basic policy and forward strategy which today, although not inflexible and always subject to constant review and revision from time to time, nevertheless does represent certain fundamental concepts and contains identified guidelines for those departments in Government which are responsible for action.

The net result is coming to be called "national security policy." It might better be called a national strategy for the conduct of the cold war. In *Makers of Modern Strategy,* Edward Mead Earle writes:

In the present-day world, strategy is the art of controlling and utilizing the resources of a nation—or a coalition of nations—including its armed forces, to the end that its vital interests shall be effectively promoted and secured against enemies, actual, potential, or merely presumed. The highest type of strategy . . . is that which so integrates the policies and armaments of the nation that the resort to war is either rendered unnecessary or is undertaken with the maximum chance of victory.

It is, therefore, no longer accurate to say merely that foreign policy (in the broad sense of that term, including the political, economic, and psychological fronts of the cold war) and military policy are required to work in double harness. They are rather being blended into a national strategy.

Democracy's Appeal Strong

The general outlines of this strategy are fairly clear. Its basic assumption is that a system of government based on the theory that the state exists to serve and protect the individual in freedom, an economy based on the incentives of free competition among individuals, is inherently stronger and has a greater ultimate appeal to more human beings than a system in which the state is the master, in which freedom of thought and enterprise does not exist. This assumption accepts as axiomatic—and as proved by all experience—that such a state control system can continue to exist only if imposed by force on individuals. It can be expanded likewise only by force. Denied expansion it will perish from its inherent contradictions even where it now exists, suddenly or by a gradual process of change and attrition. Our system, on the contrary, can expand into the hearts and minds of peoples now confused and frightened by the responsibilities of independence, by *acceptance* and by adaptation to local necessities.

Therefore, if we can deter the Communist powers from resorting to force as an instrument of expansion, the superior attractions of freedom and the inherent strength of the free way of life must prevail in the end.

So considered, on the military front our attitude is defensive-offensive; our purpose is deterrent. *On the political, economic, and psychological fronts we are on the offensive.*

A Job for Thousands

But to provide the general framework of a national strategy is only the first, although essential, step toward victory. To carry it out to a victorious conclusion,

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perhaps far distant, demands a series of day-to-day decisions and acts not only by the President, with the advice of the NSC, nor even just by "those departments in Government which are responsible for action," but by our personnel in the field, in direct contact with our allies and with those uncommitted peoples whom we hope to help toward freedom, in direct contact also with the outposts of the enemy.

These thousands of men and women, at home and overseas, are selected, trained, and controlled by a number of Government agencies—the Department of State, the Department of Defense, the military departments, the International Cooperation Administration, the United States Information Agency, the Central Intelligence Agency, and, in lesser numbers, by 12 other executive departments and agencies. All these agencies and individuals are concerned with the execution of our national strategy, under the direction of the President. The NSC provides a means of coordination at the highest level. In each country concerned coordination under the direction of the Ambassador—as the President's representative—was provided for by Executive order in 1954. Lincoln Gordon, in *The Representation of the United States Abroad*, says that:

There can be large gaps between high-level decisions . . . and day-to-day instructions to or actions in the field. In this sometimes long process of translation, harmony may prove to be more apparent than real. . . . It is at this point that the organization and personnel systems for overseas representation may determine whether operating policy is genuinely coordinated.

Military Knows How

Filling the gap between high-level decision and effective operations in the field in war is a problem which has long been familiar to the military profession. The answer has been evolved from scientific analysis of the history of past wars.

In the broad field of the conduct of war, with its diversified demands, a common viewpoint as to the application of fundamentals is essential to unity of effort. . . . The attainment of unity of effort, therefore, calls for an understanding of fundamentals, a basic indoctrination which is not only sound but also common to all commanders in the chain of command. (*Sound Military Decision*, Naval War College.)

These "fundamentals"—the principles of war—are basic not only to the education of commanders but to the training of all military personnel from whose ranks it is hoped to produce combat leaders of low or high degree. Colonels R. E. and T. N. Dupuy, United States Army, in their book, *Military Heritage of America*, state:

Encompassing as they do the sum total of past experience, they constitute a guide to the correct conduct of war. . . . One familiar with these principles is thereby stimulated and aided in his reasoning processes to solve the particular problem presented . . . [he] is armed with a basis for logical procedure in application of reason, experience, and training to his military problems.

Initiative Versus Waiting

No matter how sound the strategic plan, or how carefully selected the ultimate objective, no commander in a shooting war can carry that plan through to success unless he has subordinates who are trained to that "common viewpoint" without which the necessary unity of action at all levels cannot be attained. It is submitted that this is just as true of cold war as of hot.

The military officer, when brought into contact with or made responsible for any phase of cold war decision making, instinctively reacts in accordance with his training. He demands a clearly defined objective; he wants to attain it by positive

(offensive) action; he seeks cooperation from all whose efforts are needed to attain it; and he desires that these efforts be brought under a single leadership. He is impatient with a waiting policy which seeks merely to counter or contain each enemy initiative as it develops. He sees in security not an end in itself, but a means for attaining greater freedom of action, the power of maneuver and surprise.

The statesman (including in this term not only the diplomat, but all who are charged with responsibility for our foreign affairs in their various political, economic, technical, and psychological aspects) is, in general, not a chance taker. If he is a professional Foreign Service officer, his entire traditional background is one of caution, period; whereas the soldier is for caution in planning but *boldness in execution.*

The diplomat seeks to keep the future open: the soldier seeks to control it. The diplomat is not trained to decisions containing a high element of risk—as must many decisions in war of any kind—nor is he happy with the thought of acting before he has made sure what the other side is up to, while the soldier is habituated to decisions containing a large enemy X-factor and has been taught that bold and vigorous action is the best way of compelling the enemy to conform to his will, while hesitation is the surest method of ensuring that he will be compelled to conform to the enemy's will.

The soldier has learned the precept that used to be embodied in the old Infantry Drill Regulations: "Any plan, even though defective in some particulars, if boldly and resolutely carried through, is better than the hesitating search for the ideal." The diplomat does not quite buy that. His instinct is to search a little longer for the ideal before he makes up his mind.

As for the amateurs—a group which includes a large percentage of the personnel of the new agencies—they are in much the same position as amateur soldiers in any war. Some are confident, some are timid, and some just go along with the tide.

Needed: a New Concept

Our new national strategy is sadly in need of a new concept for the training of all personnel engaged on its various fronts —a training based on proved fundamentals, and adapted to the conditions pointed out by Mr. Almond in which the United States now holds "the foremost position in the non-Communist world, and her economic and military preeminence places upon her a continuous burden of initiative."

Consider, for example, the problem of intermediate and secondary objectives. The conduct of war involves the constant need for choosing such objectives, each so designed as to contribute to the ultimate objective and, if of secondary character, not involving a considerable diversion of resources. Yet because we now seem to have reached a condition of nuclear balance in which neither we nor the Communists could derive any advantage from full-scale war, we have acquired a risk fixation which is depriving us of flexibility in any direction.

Most unhappily, this situation has come to be thought of as a "nuclear stalemate," a cliche which has had wide currency and a very unfortunate effect. Marshal of the Royal Air Force Sir John Slessor, writing in the *Bulletin of the Atomic Scientists,* points out:

The definition of stalemate is 'a draw resulting from the player's having no move available, his king not being in check.' It is, unfortunately, only too clear that our Communist adversaries do not regard (the present situation) as a stalemate, but have plenty of moves available.

So have we, if we could stop staring at the specter of mushroom clouds on the horizon, like rabbits staring at a snake.

Strategic Advantage Ours

It is a little ridiculous, when you come to look at a globe, to imagine that a nation bloc which occupies the northern half of the Eurasian Continent can set on foot a greater variety of enterprises, can select and pursue a greater and more effective choice of intermediate objectives, than can a nation which occupies an insular position, flanked by the two greatest oceans in the world, which has with her allies complete command of the sea and of the airspaces above the sea, and is in virtually complete strategic control of the two outlying continents of Africa and South America, as well as almost every major island on the planet. If this is not strategic mobility, the power of *maneuver*, I do not know how to define the term; and here we come upon another principle of war.

Field Manual 100-5, *Field Service Regulations, Operations*, states:

Maneuver is the positioning of forces to place the enemy at a relative disadvantage. Proper positioning of forces in relation to the enemy frequently can achieve results which otherwise could be achieved only at heavy cost.

How neatly this fits in with the need for initiative in our national strategy, and with the need for the selection and pursuance of intermediate objectives, even though this means accepting the risk of limited war.

Time to Seize Initiative

Why should we remain passive, countering first one Soviet move and then another, but developing no objectives of our own? Why should we be thrown off balance constantly by this or that Soviet initiative? How about throwing *them* off balance now and then? Of course this does not mean rushing around the world with aircraft carriers, seaplane squadrons, and transports full of Marines seeking places where we can shake mailed fists. "Proper positioning of forces in relation to the enemy" can, in a cold war context, include all kinds of forces and pressures—economic, financial, and political as well as military. The trouble is we do not exploit our matchless opportunities: *we do not keep our policy initiatives in line with our capability for military initiative.*

And why should we constantly be taken by surprise—as we were, for example, by the Soviet decision to send arms to Egypt? Surprise, too, is found among the principles of war.

It consists of striking the enemy when, where, or in a manner for which he is unprepared. It is not essential that the enemy be taken unaware, but only that he becomes aware too late to react effectively. (Field Manual 100-5.)

And mobility has been called "the handmaiden of surprise."

It is certainly no coincidence that the one occasion when we took the enemy completely by surprise in a major operation of the cold war—the launching of the European Recovery Program—was when our foreign affairs were in the hands of a soldier-statesman, George C. Marshall.

Other military names—those of Smith, Saltzman, and Kirk come most readily to mind—appear on the postwar records of the State Department. But neither such men nor the gifted soldier who is now President of the United States can carry through to success a national strategy adequate to the exigencies of cold war without trained personnel able to operate effectively on its battlefields and in its outpost positions.

Reeducation Is Needed

One great difficulty is, of course, that the day-to-day operations of our national strategy have to be conducted in a goldfish bowl, under the scrutiny of a public opinion which is quite as allergic to risks

as the most conservative diplomat, as the horrified reaction to Secretary Dulles' "brink of war" disclosures amply testified. Also, it is a public opinion which has been oversold on the efficacy of the United Nations, and which has come to regard any use of force or even the threat of force on the part of a "civilized" nation like ours as verging on immorality.

Trend Is for the Better

Yet there is no doubt that our ultimate objective—peace in a secure world—has a full measure of public support. Nor is there doubt, at least in this writer's mind, that the American public will support an active policy which produces visible and positive results with greater favor than a policy of drift and wait for the enemy to move first. The goldfish bowl is doubtless a handicap at first. Nervous citizens can see what we are doing, it is all there on the front pages; they can only imagine what the enemy is doing, and they can always hope that he isn't doing anything.

There is apparent, however, a weariness with the end results of leaving the initiative to the enemy; a growing comprehension of a fact known to all military people that there is a greater risk in sitting still than in well-conceived and vigorous action. The national strategy which will appeal to the American people for the long pull will be a strategy imbued with the principle of offensive action—as the only means of achieving decisive results. The best education for the public mind in this regard would surely be the planning for and attainment of visible intermediate objectives in the cold war: objectives clearly contributing to the ultimate national objective.

"The function of the public in a democratic policy-making process," says Almond, "is to set certain policy criteria in the form of widely held values and expectations." Policy is judged by its approximation, in results, to these values and expectations. Successes, even minor ones, will produce much the same reactions as small victories in an otherwise dragging "hot" war. They contribute to an atmosphere of confidence in which enterprises of greater weight and moment can be undertaken.

But to produce such results we must have:

. . . orchestration of action. No conductor, whatever his talent, can command great music from his orchestra unless there is a score, and all of his musicians are reading from the same *score.* (Howland H. Sargeant in *The Representation of the United States Abroad.*)

Nor can he produce great music from his orchestra unless each musician is not only trained in handling his own instrument, but in the basic principles of harmony which are the foundation of all musical training.

Follow Military Example

Professor Harold D. Lasswell of Yale University told the annual meeting of the American Political Science Association that one reason for our failure to measure up to the significance of the nuclear age is that "there are not enough political scientists trained in physics and not enough physicists trained in political science." In the blending of military and foreign policies which go to make up our new national strategy, there are far more military men who have some training at least in political science than there are people on the foreign affairs side who have any training in military science. For the past half-century our military educational system has been gradually widening its horizons to include the political and economic aspects of war and the relation of force to policy.

Even the professional Foreign Service has not included any corresponding emphasis in its training program on the relation of policy to force. This is a state

of affairs which badly needs correcting. A beginning is now being made in overhauling the State Department's training program—a change intended, among other objects, to "give those officers headed for the top jobs the proper balance of general and special competence."

Far wider extension of such a program, at least for the basic training of all individuals entering the foreign affairs service of the United States in any of its varied activities, seems essential if the gap between high-level decision and performance in the field is to be lessened.

Back in World War I a battalion fresh from the training camp was in the front-line adjoining my own. I well remember the grim expression on the face of our liaison officer as he reported to the colonel. "Sir," said he, "our flank's in the air. These new chums just haven't got the word." *The military profession of this country is in possession of a basic philosophy for conducting wars—cold or hot—which has stood the test of experience and has definite application to our present needs as our new national strategy takes form in the face of an implacable and active enemy.* But there's an outfit on the flank that hasn't got the word. Maybe it would be a good idea to pass the word along!

It is clear that the conflict between international communism and freedom has taken on a new complexion. . . . We know that Soviet and Chinese communism still poses a serious threat to the free world. And in the Middle East recent Soviet moves are hardly compatible with the reduction of international tension.

Yet Communist tactics against the free nations have shifted in emphasis from reliance on violence and the threat of violence to reliance on division, enticement, and duplicity. We must be well prepared to meet the current tactics which pose a dangerous although less obvious threat. At the same time, our policy must be dynamic as well as flexible, designed primarily to forward the achievement of our own objectives rather than to meet each shift and change on the Communist front.

* * * * *

Because the conditions of poverty and unrest in less developed areas make their people a special target of international communism, there is a need to help them achieve the economic growth and stability necessary to preserve their independence against Communist threats and enticements.

In order that our friends may better achieve the greater strength that is our common goal, they need assurance of continuity in economic assistance for development projects and programs which we approve and which require a period of years for planning and completion.

President Dwight D. Eisenhower

HOW NEW WOULD A MODERN WAR BE?

Lieutenant Colonel Wallace C. Magathan, Jr., *Artillery*
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The law of war can no more wholly dispense with retaliation than can the law of nations, of which it is a branch. Yet civilized nations acknowledge retaliation as the sternest feature of war. A reckless enemy often leaves to his opponent no other means of securing himself against the repetition of barbarous outrage.

—Article 27, General Order Number 100 (1863)

PLANNING necessarily must accommodate the problems of possible future war.

At the outset the task is greatly complicated by the difficulty of visualizing the nature of such conflict. However, the worth of plans for various contingencies is directly proportional to the validity of the general concept of future battle methods. History is replete with examples of the penalty for myopic vision: Jena-Auerstädt 1806, Sedan 1870 and 1940, and the Soviet shambles of 1941, for example—battles and campaigns which pilloried the responsible leaders in doctrinal stocks of their own making. The battles for which they had prepared just did not materialize. Preparations upon which governments acted foundered in wishful thinking. Error also lay in the inability often to grasp the significance of progress made by the potential foe.

The planner must free himself of bias, be receptive to ideas, and put himself in the position of the prospective enemy. While it is relatively easy to realize upon the factors under one's own control, the contrary is true of the assumptions regarding the opponent, particularly if the latter is granted the initiative.

The prevailing views are that future conflicts will either be total[1] or limited,[2] or that the advent of the hydrogen weapon has ushered in the era of peace, ruffled only by an occasional limited war. It does seem plausible that the arrival of the situation characterized by Secretary of Defense Wilson ". . . where you have enough military power on both sides virtually to wipe out the world" strengthens the latter view. Faced with this dilemma, others have been investigating the possibility of "somewhat less than total" conflicts wherein tacit limitations on the employment of atomic weapons in varying degree apply.

Possibilities advanced include complete elimination of thermonuclear weapons, restricting nuclear attack to "purely military targets," and confining atomics to "the battlefield proper." Such reexamination certainly is in consonance with the fundamental development of the postwar decade: the elevation of the USSR to thermonuclear rank.

[1] A coalition conflict, relatively unrestricted geographically and as to means with the objective of complete capitulation of the foe

[2] A conflict with a limited objective and relatively restricted as to combatants and geographic area

The counter to the proposition that general war equals atomic war equals total war might take the following shape:

Man will not choose self-annihilation.
Total war assures man's destruction.
Hence man will not tolerate total war.

For this argument to be valid, however, it must be incontrovertibly clear to potential aggressors that a nation subjected to surprise nuclear assault could still exact a prohibitive toll in reprisal.

Obviously, resilient response is a prime deterrent against nuclear attack, but does it also render unlikely large-scale "conventional" warfare in the thermonuclear era?

It was difficult for a world racked by the holocaust of 1914-18 to accept the possibility of another great war. The United States has learned and is acting resolutely on the lesson that mere revulsion is no defense, that there is no alternative to preparedness. Yet there is still no evidence that Khrushchev and his coterie have accepted the hydrogen bomb as the supranational arbiter which man has sought for relief from the threat of war. On the contrary, events suggest that the Communist Presidium is pursuing Lenin's dictum "to postpone *operations* until the moral disintegration of the enemy renders the delivery of the mortal blow both possible and easy."

Prudence dictates the doctrine of considering possible enemy lines of action rather than divining his intentions. One can exercise but little control over the will of his opponent. If Hitler had had the wit to foresee the ignominious end of the ostensibly invincible "Thousand Year Reich," even he most certainly would have acted differently. Yet he was only one of a long line of willful despots who have been consumed in the fires of their miscalculations. One may earnestly hope that the megaton blast is the elixir of peace. But, hope is not the stuff of strategy. That the ultimate weapon will eliminate war is an undemonstrable thesis.

It is difficult to assert that general war (a war without atomics), as opposed to total war, might still occur. However, as already pointed out, there are a number of possible ways of achieving limitation. At the very least one might aver that the risk of atomic employment would be high due to the intensity with which a bipolar conflict would be waged and the difficulty of either side's determining what the other would consider a "legitimate" target. The very existence of this fog of doubt, on the other hand, might well militate against lighting the atomic fuze for fear of inaugurating an uncontrollable kilo-megaton spiral.

While it is all very well to philosophize in this fashion, it is unlikely to be very convincing in debate; more tangible argumentation is needed.

Poison Gas a Parallel

It is in an analysis of past events that one must look for the general guidelines to apply to this question. Fortunately, one does not have to look very hard for a remarkably fruitful parallel: poison gas.

This analogy is not new. Several writers reflecting on possible future use of the bomb in the years following 1945 suggested that the atomic weapon might cancel itself out like the chemical weapon in World War II, for poison gas was a deadly "two-edged sword." In subsequent years the "neo-Douhet-ites" have taken pains to blunt this argument by arguing that war gas was a rather dull sword at best, and

It is absolutely essential that the so-called moral objections to the "local" tactical employment of atomic weapons be laid aside and the propaganda that any use of atomics means general war be silenced

that late in the war, at any rate, Germany refrained from its use due to air inferiority.

It seems incredible that the effectiveness of this *battle-proved* weapon should be questioned, considering the ready availability of informed opinion. General Pershing urged the Senate to ratify the 1925 Paris Treaty to outlaw poison gas, otherwise the way would be open "for the use of the most deadly gases and the possible poisoning of whole populations of noncombatant men, women, and children."

Brigadier General Amos A. Fries, Chief of the Chemical Warfare Service, American Expeditionary Force, stated that the use of gas in World War I was child's play compared to what it would be in the future. Liddell Hart wrote: "We are left with the airplane and the tank as the only effective means if gas becomes a standard weapon." Stalin was so concerned that the Germans might use gas in their 1942 offensive that he secured a pronouncement from Prime Minister Churchill that Great Britain would treat the use of gas on the Soviet Union as if directed against herself and would "retaliate without limit." A like declaration by President Roosevelt assured the enemy "that the terrible consequences of any use of these inhumane methods on their part will be brought down swiftly and surely upon their own heads."

The point that Germany lacked the requisite control of the air is correct as far as it goes, but it fails to cover the initial phase of the war when the reverse was true. A closer look at this aspect is required.

In World War I Germany was able to secure an *immediate* advantage by the use of gas, much as the United States with the atom bomb in 1945. The Allies, paying little attention to reports of possible German use of poison gas, had placed their faith in the moral suasion of The Hague Convention of 1907 which forbade the use of "poison or poisoned weapons." Hence the German attack at Ypres behind a cloud of chlorine gas on 22 April 1915 came as a complete surprise. The Allies decided the following month to retaliate, although it was September before they were able to do so. Surely the German High Command must have reckoned with this capability. Actually, Germany's decision to use gas largely depended on conditions existing at the front—on *tactical* factors. The air arm was in its infancy. Hence strategic air-chemical action could not enter into the calculation to use gas.

However, only the end of the war grounded nascent strategic air forces. A significant dimension was about to be added to warfare and military thinkers soon married up the chemical and air arms. This attitude was pretty well summed up by Brigadier Lord Thomson, onetime British Air Minister:

The next war will be fought in the air, it will consist of airplane raids above the great cities. . . . Against these, incendiary, explosive, and poison gas *bombs will be used.*

The German Army's chemical warfare expert during World War II, Generalleutnant Herman Ochsner, has pointed out that during the interwar period both civilian and military officials in Germany became convinced of the danger to the *whole German nation* of unrestricted chemical

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warfare and resolved to avoid the use of poison gas unless in reprisal.

In spite of limited international agreement, wisdom demanded preparedness. Germany's use of the weapon in World War I provided a good lesson on the value of paper deterrence. It was difficult, moreover, for the great powers to measure their relative gas capabilities, for secrecy in this area was written with a capital "S."

How did the situation which confronted Germany at the outset of war in 1939 compare with that in 1915? In 1939 as in 1915 she was on the offensive in a general war. Moreover, Germany now had to reckon with immediate retaliation; the long-range bomber would involve the entire country in active combat. In addition, Germany was simply not ready to wage offensive gas warfare. Also, the Army barely had sufficient gas defense equipment, not to mention the lack of protection for the civil populace.

Reich Feared Retaliation

Moreover, there were sound tactical reasons influencing Germany to refrain from the use of gas. When it was first employed in 1915 it was regarded as basically an offensive weapon. However, it gradually became apparent that gas actually favored the defense. In fact, the use of chemicals materially sustained the German capacity to carry on the struggle. From the outset of World War II the *Oberkommando der Wehrmacht* (OKW) was apprehensive lest the Allies themselves introduce gas! German doctrine held that speed was of the essence and there were many critical points during the lightning campaigns when the use of gas could have slowed the pace of the spearheads. Of the Eastern Front General Ochsner writes: "We never discovered what caused the Russians consistently to desist from the use of gas . . . [even] in defense of the very existence of their state." America's own chemical expert, Major General Alden H. Waitt, soberly points out the danger to the Allied cause implicit in Germany's use of gas as we took the initiative:

No one can prove it now, but, as a student of chemical warfare for nearly 30 years, I believe that subjecting our forces to the heavy gas attacks that were possible in Normandy might have delayed our invasion for six months and made later landings at new points necessary.

Therefore, from a tactical viewpoint alone it is clear that Germany's decision was sound. Moreover, tactical considerations governed, for Germany at this time was not shackled by an inferior air position as she was later in the war. Both sides considered that the use of gas tactically would be the signal for its general use. Hence when the Wehrmacht turned to active consideration of gas, even though its use seemed to hold out good prospects for success *tactically*, the idea had to be abandoned in view of Allied air superiority.

A Wehrmacht study of the denunciation of international agreements in February 1945 concluded that, "At the present moment the disadvantages of a repudiation of the obligations still kept up to the present in any case by far outweigh the advantages." At his trial in Nurnberg the German Armaments Minister, Albert Speer, testified that when he heard rumors in the fall of 1944 that Goebbels and Ley were considering the use of Germany's new war gases, Tabun and Sarin, in an effort to intensify the war, he stopped their production ". . . since it would not be long before it would bring the most terrible catastrophe upon German cities."

The pattern which emerges is that even those of the belligerents whose very existence as a nation was at stake, Germany, the USSR, France, or Great Britain, elected not to use poison gas. Even *prewar* opinion to the contrary and considering the nervousness with which staffs on both

sides checked rumors of the use of gas, this abstinence was a truly remarkable, but, as we have seen, logical development.

It had been assumed all too readily that a new war automatically would pick up where the last left off. There was little appreciation of the impact on the eventual decision of the defensive qualities of war gas. Moreover, who would have predicted that even nations which had ignored international obligations or avoided such commitments when it suited them would recognize *de facto*, at least, the authority of international law. Who could have defended an opinion that even dictators who deliberately adopted the most depraved methods as instruments of power would fail to sanction chemical warfare? One is led to believe that even in the face of most disastrous conditions, the body politic apparently intuitively chooses "survival of the species" rather than survival of the nation.

In our analysis of World War II we have seen air-chemical deterrence operate, not to prevent a war, but, once war got started, to "sanitize" it. The warring powers accepted the principle that if either side took the initiative, the other would retaliate to the maximum degree. Deterrence was proved to be the obverse of retaliation. However, the degree of deterrence was shown *not* to be necessarily proportional to the effectiveness of the retaliatory threat. Lack of precise information on the *quality* of this threat produced the "safe-side" reaction.

It would seem equally as incorrect to argue that multilateral possession of nuclear weapons assures their use in future war as to have argued that poison gas would be a feature of the next great conflict. Yet a vigorous bomb proponent has this to say of chemical warfare: ". . . chemical warfare makes life unbearable for the belligerent nations. . . . The penalty for a moment's unreadiness night or day, may be death." This is the reason Air Marshal Saundby adduced for mutual restraint in World War II. Yet would not the sentence have even greater validity if the word "atomic" were substituted for the word "chemical"? It is difficult to see how the Air Marshal can avoid being hoist on his own petard. This is the position in which those who belittle the poison gas analogy must inescapably find themselves.

Advantage to Defender

Just as in the long run the chemical weapon gives an advantage to the defender, so does the atomic. Unless he were prepared to stake everything on the success of a highly risky strategic hydrogen campaign to knock out globe-spread United States strategic air, this factor of relative disadvantage would militate against an attacker's opening a conflict with nuclear armaments. The attacker's initial land objectives might well be the elimination of United States oversea airbases in order to reduce his problem to manageable proportions.

However, even granting favorable results here, the insularity of many bases and the Navy's mobile air platform limit potential success in this area. Precious strategic air forces with their "Sunday punch" probably would be husbanded during the initial stages of the campaign as both sides felt out the situation. The temptation for the defender to use atomics tactically would be tempered by the "iffyness" of the air situation. It should be remembered that the entry of France and Great Britain into the last great war as Poland's allies did not unleash two-way bomber traffic. It was not until May 1940 that strategic bombardment commenced, nine months after the war had begun.

Does it not seem rather more plausible that the "great deterrent" instead of intrinsically precluding general war establishes how such a war would not *be conducted?* The voraciousness of the hyrogen bomb outmodes the principle of smashing

the enemy's homeland just as surely as the tank outmoded the cavalry. This is *not* to say that one should lift the threat from the back of a transgressor; far from it. The bonds sundered by the armies of the *levee en masse* were the work of a generation which forgot that the conduct of the "chessboard" wars of the 18th century had been governed by an abhorrence of the enormities of the Thirty Years' War. Plague, famine, devastation, and degradation on a national scale born of that incredible jumble of conflicts were grim reminders of the penalties of excess. The elemental magnitude of the Pacific fireball provides an agitated world with a priceless lesson *before the fact.*

Moral opprobrium probably would exercise little deterrence to the use of atomics in a *general* conflict since the side initiating their use would expect to secure the utter defeat of the foe as in the case of Germany and Japan in World War II.

However, the importance of the Soviet "line" on out-and-out opposition to the use of atomics in war should not be overlooked. Even though the USSR recently has relaxed her demand for outlawry of the atom bomb ahead of any other steps toward disarmament, she continues consistently to denounce the bomb. In his speech accepting the Premiership in March 1954, Mr. Malenkov said that "a new world war, with modern means of warfare, spells the destruction of world civilization." Immediately following his downfall this assertion was ridiculed in the Soviet press:

. . . people . . . inclined to believe in the 'absolute power' of the newest weapon of mass destruction . . . were not capable of realizing the true meaning of the fables about the 'perishing of world civilization.'

Now, however, Khrushchev has readopted the Malenkov line. The Associated Press quoted him as saying in London on 19 April that:

Both sides know the power of this [hydrogen] weapon. Therefore, one must not subject people to danger and subject the world to the danger of destruction and the annihilation of property.

The significance of this statement lies in the fact that it is not limited in application to general conflict, but applies to all fighting anywhere. *In turn, it is perfectly consistent with the Soviet theme that any use of the bomb would lead inexorably to general war. Such propaganda, of course, has the aim of depriving the Armed Forces of the United States of the possible use of the "atomic equalizer" in coping with aggression by forces surfeited with manpower in less developed areas of the world, the principal areas of incipient Communist offensive effort.*

It is one thing to say that in World War II it was accepted that a weapon used tactically might be expected to be used strategically. However, it is quite another matter to say that the use of a certain weapon is a signal for the outbreak of general or total war per se. Unfortunately, this view is fairly widespread. Recall the alarm in the capitals of Europe following President Truman's remark in his press conference of 30 November 1950, to the effect that:

The United States will take whatever steps are necessary to meet the military situation in Korea . . . that there has always been active consideration of the bomb's use. . . .

The actual potential *casus belli* probably was the threat of ignominious Chinese Communist defeat, a challenge which the USSR might have considered vital to her long-range national interests. Thus the Korean conflict while scuttling the interwar slogan that future war would be total, lent credence to this other, equally invidious slogan. It is patently ridiculous to argue that the use of atomics is conducive to general war. This thesis ignores the fact that one does not fight for the sake

of mere fighting—although the romanticists would have it otherwise—but that conflict has the purpose of furthering interests unobtainable by other means. The conflict, and its arena, is circumscribed or "limited" by such purpose, or should be. Obviously, there is always the danger in limited action that the threat posed to the interests of a great power, as it sees them, may lead to a broadening of the conflict. However, this risk has nothing inherently to do with the degree and type of force employed.

Strategy Versus Tactics

A general or total conflict is fought in two realms, the battlefront proper and the homefront. A total war is a national war. It was a consideration of the interaction of the two "fronts" on national capacity to wage the battle which brought about abstention from gas warfare in World War II. World War I in this sense involved the fighting front only. To put it another way, strategic factors operative in World War II overrode consideration of a tactically useful weapon. The corollary of this proposition is that where a conflict lacks strategic depth, the scope of weaponry is affected by the tactical situation alone.

Therefore, whereas a general conflict being strategic in nature and involving the entire fiber and structure of powerful nations might well be nonatomic, a "local" conflict fought within relatively circumscribed limits, not involving the immediate issue of national survival and, consequently, rather more "tactical" in nature, might furnish a suitable arena for the employment of atomics, particularly of low-yield weapons susceptible of close control and readily predictable results.

In such a case the issue for or against their use would be decided on the basis of relative advantage to be gained. Here, readiness of the United States Army to employ atomics and the maintenance of technological superiority as to weaponry, particularly in the low-yield spectrum, and techniques of integrating the weapon into the battle are of paramount importance. *It is absolutely essential that the ghost of moral revulsion against such use be laid to rest and the propaganda that any use of atomics means general war be silenced.* Certainly the role of the Army as a brake against vandal irruptions should override any so-called moral objections, for the aggressor himself has committed the most heinous offense when he crosses the frontier in search of conquest. Let the punishment fit the crime. Meanwhile hydrogen deterrence would serve as a powerful restraint upon the casual spread of any local conflict.

Thus in answer to the question, "How new would a modern war be?" two possibilities which are generally played down emerge as logical:

1. General war fought with vastly improved "conventional" weapons.

2. Limited war fought with judiciously employed atomic weapons and relatively small troop commitment.

This is not to say that such are the *only* forms which future conflict may take. It does suggest, however, the breadth of the possibility spectrum with which the planner must cope and the consequent flexibility which must accompany planning to avoid the waiting pitfalls.

The best laid schemes o' mice and men
Gang aft a-gley;
An' lea'e us nought but grief and pain
For promis'd joy.
Robert Burns, To a Mouse

Atomic Play In Infantry Battalion Test

Brigadier General John H. McGee, *United State Army*
Assistant Division Commander, 25th Infantry Division

THEORETICALLY, there may be a question as to whether future military belligerents will employ nuclear weapons. The United States Military Establishment cannot afford the luxury of choice in the matter. Accepting the greater evil, we must assume that these new weapons *will* be used in waging future wars.

Acceptance of this assumption permits concentration of effort on the definition, clarification, and elimination of the obscurities surrounding other current intangibles in the field of atomic warfare. At present, all echelons of the United States Army are engaged in experimental field exercises aimed at clarifying obscurities in the fields of organization and training and developing the tactics and techniques that will permit realization of the maximum potential from nuclear weapons.

The 1956 Army Training Test for the infantry battalions of the 25th Infantry Division, as directed by United States Army, Pacific, was conducted by Headquarters, 25th Infantry Division, during the period April-June 1956 at Pohakuloa on the island of Hawaii. The test problem described below was in part an experimental effort to introduce atomic play into this important training exercise.

The Pohakuloa Training Area, located at an elevation of 6,000 feet in a saddle between two high mountains, possesses excellent terrain characteristics which are favorable for realistic atomic training. Extensive lava flows and the high-flanking mountains form natural barriers which tend to canalize troop movements. Cinder cone hills which rise abruptly several hundred feet from the flat lava plain are interspersed throughout the training area. These cinder cones, or *puus*, provide excellent observation and, when closely grouped, afford splendid reverse slope defensive positions with inherent cover from the blast and heat of an atomic explosion forward of the position.

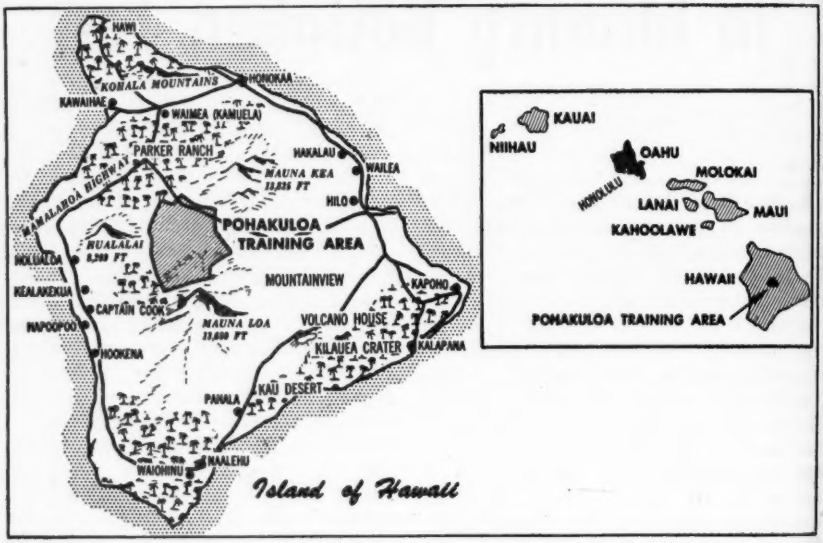
Four Phases Added

The time length and phases of the training test as prescribed by Army Training Test Number 7-26, *Training Test for Infantry Battalion, Infantry Regiment*, were modified to provide time for the tactical sequence of realistic offensive and defensive atomic play. Time length was increased from the prescribed two days and one night to three days and three nights. The standard three-phase sequence of defense, withdrawal, and attack was changed to a seven-phase sequence of pursuit, defense, withdrawal, reverse slope

The real obscurities affecting the Army's adaptation of organization and training to nuclear weapons employment appear to stem from difficulties involved in their use under hostile air superiority conditions

defense, atomic supported resumption of pursuit, flank guard action, and attack.

The introductory pursuit phase was played as a command post exercise for the



situation buildup. The prescribed defense and night withdrawal phases then followed.

The night withdrawal served as a step for the night occupation and organization of a battalion reverse slope defensive position. The successive withdrawals of the combat outpost, main body, and the covering force were used to draw aggressor into the area forward of the reverse slope defensive position. This area confined the aggressor within a restricted zone, having a steep mountain on the right flank and a mined-gassed lava flow on the left flank. The next morning the fire plan for resumption of the pursuit included the simulated firing of an assumed 15-kiloton atomic projectile above the massed aggressor forces by supporting atomic artillery.

On the resumption of the pursuit the test battalion reverted to regimental combat team reserve and subsequently was assigned a flank guard mission.

During the flank guard phase an aggressor atom bomb was dropped on the column of an adjacent regimental combat team which also was in pursuit on a parallel route to the south. This aggressor action on a distant target could be observed by test battalion personnel and provided an additional means for testing the battalion's atomic defensive training.

The aggressor atom bomb also provided a vehicle for testing the flexibility within

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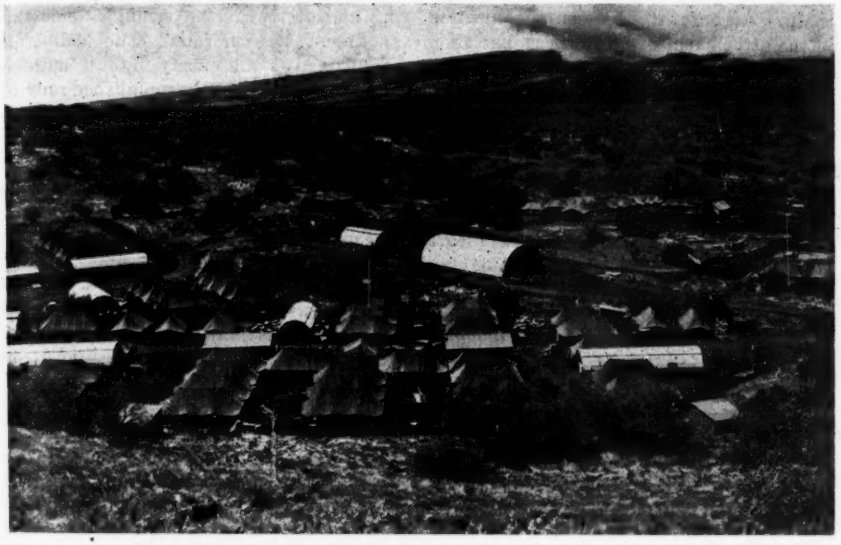
Brigadier General John H. McGee was graduated from the United States Military Academy in 1931. He served during the defense of the Philippines in Mindanao, Philippine Islands, where he commanded the Davao Subsector. He was taken prisoner but escaped two years later and subsequently commanded the 169th Infantry in the Philippines. As a member of G3 Section, Eighth Army, he organized the United Nations Reception Center and the 8086th Army Unit in Korea during 1950-51. He served as G3, USARPAC, prior to his present assignment as Assistant Division Commander of the 25th Infantry Division.



The Army Training Test for infantry battalions of the 25th Infantry Division was conducted in April-June 1956. Above, the division base camp at Pohakuloa on the island of Hawaii where the test was made. Located between two high mountains, the training area below possesses splendid terrain characteristics for realistic atomic tests.

the present infantry division organization in the attachment of an infantry battalion team from the parent to another regimental combat team.

In the final phase the reinforced test battalion was attached to the partially destroyed adjacent combat team. A coordinated attack by the reinforced test battalion and the remaining effective elements of the regimental combat team against an aggressor position delaying the pursuit on the southern route terminated the test exercise. Marine aircraft supported this attack.

Lessons Apparent

Observations during this exercise indicated:

1. Present tactical doctrine is adjustable to atomic warfare through the correct application of appropriate governing combat principles.

2. *The reverse slope defense probably will be used more frequently in future combat* because of the intrinsic cover from an atomic burst forward of the position.

3. Training today must emphasize that prearranged, tactical, standard operating plays are double edged. *There is a dangerous tendency for combat leaders to implement prearranged plays too hastily and without properly estimating the enemy and terrain situations.*

4. The technique of successfully building and destroying an enemy atomic target must be perfected. The deliberate canalizing of an enemy into a suitable atomic target can be accomplished only by highly trained units.

5. Basic and advanced individual training must provide a foundation of well-trained, physically fit soldiers thoroughly grounded in the basic fundamentals of fire and discipline.

6. Basic and advanced unit training must emphasize the training of tactical leaders at all echelons from the squad to the regiment.

7. Combined-arms training must be stressed at every opportunity.

Air Situation Important

This field exercise conducted by the 25th Infantry Division indicated that present tactical doctrine and training for the infantry battalion are adaptable to nuclear warfare under conditions approaching friendly air superiority. The detachment of a battalion team from the parent regiment and its attachment to another divisional combat command was smoothly executed. *The real obscurities affecting the Army's adaptation of present organization and training to the concept of nuclear weapons employment do not appear to stem from the new weapons themselves, but from the difficulties involved in their employment under conditions of hostile air superiority.*

Correction—As printed on page 5 of the August 1956 issue of MILITARY REVIEW in the article "Ground Forces—Key to Survival," the cost of a field army of 15 divisions requiring approximately 600,000 additional men was incorrectly given as 33 billion dollars a year. The author's figure was 3.3 billion dollars a year.

ECONOMICS OF LOGISTICS

Colonel Thomas F. Donahue, *Ordnance Corps*
Ordnance Section, Headquarters Sixth Army

In "Logistics of the Future" in the September 1955 issue of the MILITARY REVIEW, *Colonel Donahue stated his theory that it is both extravagant and futile to stockpile huge reserves and that the United States could afford many more divisions with the money currently wasted in the pipeline. In other words, if we must cut the defense dollar, let us cut the fat from logistics, not the muscle from our combat forces.*

In "Communications Zone: Asset or Liability?" which appeared in the January 1956 issue, Colonel Donahue warned that unless we take positive measures to reverse the trend, we shall have a ComZ, a line of communications, a support command, or some such institution on a vastly more elaborate scale for many years to come. In this third related article he examines some of the aspects of the cost of logistics and enumerates some of the ills of the present logistical system.—The Editor.

EARLIER in the series we quoted Brigadier General Paul M. Robinett, United States Army, Retired, who cited the appalling waste in the armed services. He concluded:

There must be no waste or nonessential utilization of effort or of resources, and the military planners must be reasonably correct in their assumptions and estimates.

In discussing the ComZ we quoted Field Marshal Bernard L. Montgomery:

In the scientific age into which we are moving, which is also an age of ever-increasing costs, governments have got to ensure that their armed forces and security measures are built up within a framework of economic realities.

Montgomery recommended eliminating the tail of the army with its vast array of headquarters. This tail certainly includes the communications zone.

Economy, cost consciousness, and management have become as important a part of our daily lives as the salute gun. The cost of our desk, or of the sedan or jeep or gun carriage we operate, is prominently displayed. Thus we cannot ignore the trend toward increased cost within the Military Establishment.

The Department of the Army recently announced estimated savings exceeding 20 million dollars from suggestions of military and civilian members during Fiscal Year 1955. A total of 61,669 recommendations were submitted; 11,374 accepted from civilians, and 3,287 from the military in this country and overseas bases.

Fourth Army saved almost half a million dollars destroying and retiring old paper. Construction of a shortcut road overseas saved $26,000 annually in gasoline consumption. Smaller savings are also considered and contribute their economic im-

The present strength of the combat forces is not commensurate with funds expended. Losses in logistics are staggering; action taken now to stop wastage may give us more modern divisions with less money

pact. Modification of a salute gun to accommodate a shotgun shell receives proper recognition.

Turn Off the Spigot

Surely all of these well-publicized efforts add up to a reduction in the over-all cost. Final cost for any particular product or service should approximate civilian standards. In this cold war it is important that we maintain our strength in being with the minimum expenditure of manpower, money, and natural resources. The prospects of failure are too horrible to contemplate.

After observing the economics of logistics as practiced in many Army activities, it is impossible, however, to shrug off the deduction that there are defects in the system. The Army resembles Lewis Carroll's Queen in *Alice in Wonderland* who warned that "we must run (save) as fast as we can to remain where we are. To go from here to there, we must run (save) twice as fast." A thousand swishing mops are ineffective if no one remembers to shut off the spigot. Indeed, for sheer obfuscation, nothing approaches the paradox of economy as practiced in the Armed Forces.

Progress Is Expensive

If we are to maintain the strength of the Army, constant replacement of equipment is essential. The flurry of activity occasioned by the police action in Korea has waned. The cold war requires greater, not less, emphasis on modernization. Replacement of combat equipment of World War II vintage must be accelerated. This will be an expensive undertaking.

The size of the Army engenders a certain degree of inefficiency; therefore, a reduction in size should increase the efficiency and reduce costs. Unfortunately, this is unlikely for a number of reasons. The most important is that the "overhead" does not decrease in proportion to the numerical strength. This can best be illustrated by a chart (Figure 1) of a logistical installation with reducing workload. It will be noted that as the workload drops, the percentage of personnel in the overhead increases from 17 to 42 percent.

This applies to the entire defense structure, particularly the upper layers of supervision. If we accept the premise that each reduction in appropriations dictates only an equivalent reduction in strength, we are headed for disaster.

Training Costs Increasing

Assume that the military planners are faced with a successively reduced budgetary ceiling. Then we must recognize that the number of personnel in uniform will decrease at an accelerated rate because the cost of training men in the modern Army is constantly increasing. The equipment used is more expensive to manufacture and to maintain. Recent articles have pointed up fantastic costs: $275,000 to train a jet pilot, or $500 an hour to keep a helicopter in the air.

If costs continue to rise, we might easily be led into the fatalistic attitude of "what's the use?" Commander E. R. Blandin of the staff of the Industrial College of the Armed Forces was quoted in an Army newspaper to the effect that since the cost of each war since the mid-19th century had increased tenfold, the next war was a cinch to cost four trillion dollars. World War II cost 380 billion dollars. The human

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mind is incapable of comprehending a trillion dollars.

It is true that those laboring in the field of new weapons and additional uses for atomic energy in combat consider the economic factors involved. Special terms have been created to determine the dollar cost of yields when determining relative efficiencies of new weapons systems. F. O. Miksche, in *Atomic Weapons and Armies*, stresses the economic implications of the new type of warfare. Other investigators, including Professor C. W. Sherwin of the University of Illinois, have gone beyond this in analyzing future total atomic warfare between symmetrical powers in economic terms.

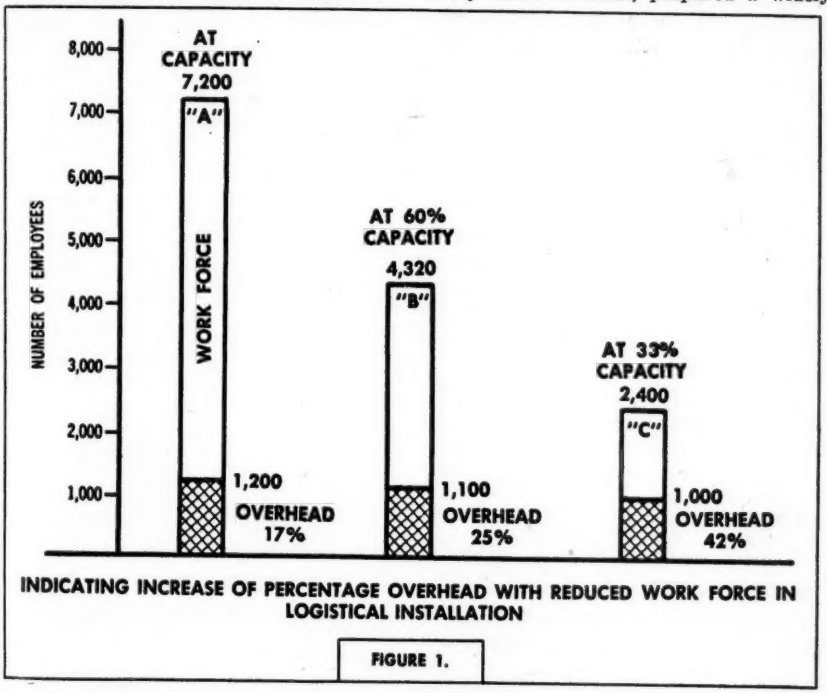
Too frequently, such studies reflect a cloistered or laboratory approach. The investigators consider the hard core of the problem while ignoring the soft, enveloping, logistical mass. This soft mass increases cost tremendously.

Trim the Logistical Mass

General Maxwell Taylor, when appointed Army Chief of Staff, prepared a widely quoted credo which includes a statement on economy.

The Army strives to get the most defense for the money from the resources provided for it. It spends its money prudently for the essentials of defense in accord with good business practice. It is constantly self critical, trying to uncover inefficiency and malpractice.

The great potential area for practicing economy is in logistics, the present soft, enveloping, logistical mass.



INDICATING INCREASE OF PERCENTAGE OVERHEAD WITH REDUCED WORK FORCE IN LOGISTICAL INSTALLATION

FIGURE 1.

Unfortunately, we accept economy, cost consciousness, command improvement programs, and management with the same complaisance as troop information and education, character guidance, and others. Economy is the special province of the comptroller, and our attitude is best summed up by Anthony L. Wermuth's description of the comptroller in *Portraits From Pentagonia: Or Six Laps Around the A Ring:* "Dedicated to the proposition . . . that you're not getting any of it here." The apathy engendered tends to negate top-level efforts.

Combat Arms Economical

One of the many paradoxes we encounter is in evaluating the relative economy of the tactical elements as contrasted to its logistical support. Despite the apparent apathy, the combat arms are operated efficiently and economically.

Those practices which ensure a well-disciplined Army prevent waste of material; a combat-ready Army is an economical Army. Investigating boards, reports of survey, statement of charges, and shakedown inspections, when properly conducted, present an effective bar to dissipation of natural resources. The Army practices economy unconsciously.

Care of equipment has become almost a fetish. The Infantry School in the "Commander's Preventive Maintenance Training Program" reminds its readers that "any war of the future will not be a war of plenty and every means to conserve material and supplies will be necessary." If we have a good Army, then we have an economical Army, particularly in the fighting elements.

Civilian Practice Simple

In contrast, the logistical support is grossly ineffective, and the degree is enhanced by the very practices which make the combat arms efficient with respect to cost. The closer logistics follows the tactical concept, the more inefficient it is. What are some of the reasons for this strange situation? We can answer by describing briefly the operation of a *commercial* depot in the United States.

"Goods received are counted by bulk package only. If each package is marked to indicate 50 items, that is accepted. Goods are stored neatly without too great emphasis on symmetry. Once a year, at Christmas, a shutdown inventory is taken. Unserviceable items are junked. No attempt is made to obtain reimbursement from the vendor or to reclaim damaged goods, and there is almost no paperwork. One-day service is practiced. Goods are sold once. No returns are accepted. There is no inspection, no processing, no packaging. Goods are shipped in cardboard containers or merely tied together with plastic tape. Reorder point is indicated by a string wrapped around the reserve stock, the latest received."

Army System Complicated

To describe comparable supply procedures in an Army installation would take several volumes. Procurement regulations are even more complicated. Unfortunately, in our supporting logistics we retain too many of the practices essential to discipline in the combat forces, but extravagant in the rear areas.

In a supply depot we cannot afford to prepare a report to account for a discrepancy in our inventory, but we do it every day. Vehicles in the battalion motor park in perfect alignment for inspection may be justified; thousands of vehicles on blocks lined up at 22½ degrees obliquity in a depot are a waste of man-hours and money. A coke bottle in a foot locker ready for inspection may be a heinous offense; it is relatively unimportant in a supply installation. Too frequently, such minor deviations in logistics are magnified whereas the relative costs are ignored.

Military Management

In the military, management is usually considered in its relation to leadership—the managing of men. In the book, *Military Management for National Defense*, by Brigadier General John R. Beishline, United States Army, Retired, the cover reads:

This timely book presents a scientific blueprint for maximum effectiveness and economy based on the most successful practices of American business management and the best traditions of military organization.

A careful rereading fails to disclose more than a casual reference to economy; in fact, the author explains that economy and effectiveness are secondary objectives (page 55). He goes on to state a truism—that in time of war, economy ranks far below effectiveness. Organization and leadership are stressed almost to the exclusion of the type of management which promotes economy of logistical operations. This same approach has been noted in numerous short articles in military publications.

The general staff type of organization, considered so essential to the military, is not readily adaptable to logistics. The most cursory observation discloses almost invariably that the management structure in logistical activities is topheavy. This has been expressed more effectively and tersely: "All slide rules—no shovels."

A military organization frequently carries out its mission with its total effort expended internally. This is particularly true for a training mission. The net result is strength in being which in itself possesses intrinsic worth.

Easy to Spin Wheels

Conversely, a supply installation which follows this pattern inspires gross waste of money, manpower, and natural resources. It is quite possible for a depot to operate up to a reasonable standard according to present criteria when its output is negligible. This can best be illustrated by a story told by the manpower people during World War II. We cannot vouch for its accuracy.

In North Africa an Army Air Force Base with 3,500 service troops continued operation long after the attack had moved several hundred miles to the east. When its sole outward activity consisted of refueling one courier plane a day, the base continued to hum with activity. The Quartermaster fed the troops, Ordnance repaired the arms and vehicles, Engineers maintained roads and runways, and Signal provided communications. Upon analysis this installation was immediately closed. It is an exaggerated example of a condition which still may exist in many logistical installations and does exist to some extent throughout the system.

Honesty Is Emphasized

By the same token the military, in its emphasis on leadership as the "all in all" of management, has cloaked the leaders with certain essential elements of character. One of these is basic integrity or the old-fashioned virtue of honesty.

The American Army leader, like Caesar's wife, must be beyond reproach. This is not true of military leaders in all other nations of the present day. It is not necessary to sermonize on this.

If honesty is of paramount importance today in the Army leader, it was not always so in our military heritage. In 1710 Johnathan Swift published a Tract charging that the Duke of Marlborough, hero of Blenheim, had profited to the extent of 540,000 pounds (many millions of dollars in today's currency) from his military position. Marlborough supposedly had accepted heavy bribes from Sir Solomon Medina, a contractor who furnished bread to the Army. That could not happen today in this country.

Possibly because of this evolution, any slight deviation from the accepted standard is newsworthy. Some cases were brought to light immediately following World War II, with a few additional incidents since then. If an installation commander uses a few pieces of Government lumber to build a dog house off-post, this dereliction is emblazoned in the headlines. But strangely enough, if that same officer, through neglect of duty, wastes millions of dollars, it seldom is recognized or receives the light of publicity.

Should We Reorganize?

Would the military fare better if it were divorced from logistics? If the combat forces received its appropriation and purchased supplies and services directly from civilian agencies, we could unquestionably increase the combat strength and retain a far greater proportion of the total dollars expended than at present. However, that compulsion which at present reaches from the frontline back to the depot and arsenal would be lacking, and the Army might well become the victim of competing groups which place profit above national defense. This separation is not practicable.

Does the answer lie in reorganization? Some reorganization along functional lines is necessary.

Will the Army benefit from consolidation of its technical services into a service corps similar to the Navy and Air Force? *Most of us believe that this is desirable and inevitable.* Will equal benefits result from relinquishing control of logistical support including rear area support in combat zones to civilian agencies? There is a strong tendency in this direction now. *Since the present organization is not the basic fault, reorganization is not necessarily the solution.*

What are some of our failings, and what can we do to promote economy in logistics?

THE STOCKPILE

The first of these is the stockpile complex mentioned in the first article of the series. From the point of view of economics, it might be well to evaluate some dollar losses involved.

A field army expends tremendous sums for supply and transportation. In peacetime we do not normally support a full-strength type field army. Let us consider one at approximately one-third strength. Restricting our consideration to those supplies essential to feeding and training and troops, the costs run approximately one million dollars a day. If the pipeline represents 60 days, the value of goods in the pipeline totals 60 million dollars. This does not include the cost of transportation of the supplies.

But unfortunately, our pipeline is not 60 days of supply; it is nearer to 360 days. Then we have $360,000,000 invested in the pipeline for this small type field army. For some types of goods essential to operation in Korea the pipeline exceeded 500 days. It is our conviction that far more than one-half the monetary value of goods in any pipeline—representing an excess of 60 days from farm, processing plant, or factory to the ultimate consumer—is wasted.

COSTING

The second of our failings is our inability to ascertain the total cost of any product or service in the military. We have no method for ascertaining the handling cost of any item from the vendor to the point of issue. We have derived the cost of maintaining a soldier in uniform for one year, with some degree of accuracy, but the cost of maintaining a tank is still a mystery.

Some years ago the author developed formulas to determine efficiencies of logistical installations. The intention was to provide a substitute for a profit and loss statement in evaluating the relative

operating efficiency of the installations and, more important still, to determine the trend. The formula for the efficiency index (I) as finally evolved is stated here for what it is worth.

$$I = \frac{3M+10G\,(R+2S+X)+5A\,(R+2S+X)}{T}$$

M = Standard time for rebuild of major and secondary items.
G = General supplies.
A = Ammunition.
R = Tons received.
S = Tons shipped.
X = Rewarehousing in tons (this is arbitrarily limited to 10 percent of the total of R and S).
T = Total expended in dollars (the figures three, 10, and five also represent dollars).

Without some such method of evaluating logistical installations we tend to rely upon casual observation, absence of coke bottles in the bins, and the cost reports. The present cost report, by function, can be licked by any smart bookkeeper with or without a sharp pencil.

A suitable formula based upon total output and total dollars expended would depict some of our older logistical establishments in their true light. Data developed would indicate the relative markup for each step in the pipeline and hasten the elimination of the unproductive establishments. Eventually, it would contract the pipeline.

Picture of Inefficiency

We have cost figures and tables of manpower standards for practically all functions in the military. Presumably these apply worldwide. Consider the difference in workers assigned as shown in the following table. For purpose of comparison a commercial installation was set up as the standard. The number of military, civilian, and/or indigenous workers required to fill orders for a similar type of goods was compared to the civilian standard and a ratio established. The figures are factual but during different periods between 1952 and 1956.

Activities one to five are primarily civilian; activities six and seven military. Some adjustments were necessary for purposes of comparison. The commercial depot personnel were increased from 232 to 250; the infantry division increased from 28 to 42 to allow for overhead. The military has housekeeping and training duties which absorb a high percentage of available man-hours.

We might well utilize several pages of notes to explain this table. We propose to refrain from such detailed analysis. Lest this comparison influence anyone into the fallacious assumption that we are advocating the speedup, we might add that the commercial depot employees are members of the United Automobile Workers' Union. They were paid approximately 30 percent higher wages than civil-service workers in the CONUS depots. Overseas depot workers are primarily indigenous workers at the prevailing local wage rate.

Activity	*Number of Men Assigned*	*Orders Filled Per Month*	*Manpower Ratio to Commercial Standard*
1. Commercial depot	250	180,000	1
2. CONUS depot	1,000	180,000	4:1
3. CONUS depot	1,000	60,000	12:1
4. Overseas depot	3,000	80,000	27:1
5. Overseas depot	1,000	10,000	72:1
6. Infantry division	42	6,000	5:1
7. Army depot	720	60,000	9:1

Standards Lacking

The variation in the number of people employed would indicate not only that we do not know what it costs to perform any

function, but that actually we have no standards. If we do have standards, we choose to ignore them. Activities two and three (CONUS depots) revealed tonnage costs of $22 and $95 respectively during this same period. Activity Number three had an excellent Suggestion Award Program, hardly a justification for its increased cost.

A civilian employed in the headquarters responsible for Activity Number five, where the ratio of personnel assigned was 72 times that of its commercial counterpart, was recommended for the Arthur S. Fleming Award to the outstanding Government civilian employee. It was claimed that his various proposals had saved the Government over $600,000.

Until we devise a method of evaluating the cost of supplies and services to the Army, we are groping in the dark. If we could simplify the organization, and make one agency responsible for one product only, that would assist. Let us assume this agency procures and stores food for the Army and pays all distribution costs until this food reaches the using unit. It has no other function. The total money appropriated divided by the number fed would reveal the cost of the ration. We would then know whether it costs 70 cents or $7.00 or even more to feed a soldier for one day and whether the report of the Hoover Commission panel on food waste in the Armed Forces was justified.

Because we have no standard we can be easily convinced of economics which are fictitious. As pointed out previously, the partial cost of distribution expressed in the number of men assigned may vary from four to 72 times the number required to perform the same task commercially. Some of the difference is unquestionably due to better layout and simplified methods of the commercial activity. But to award $1,000 or even $10 for an improvement in an activity which costs us as taxpayers 70 times its commercial counterpart may be compounding a felony. If we add the additional tax burden caused by unnecessary handling of commodities, a factor which has no commercial counterpart, the waste reaches astronomical proportions.

SERVICE TROOPS

The third failing is that we do not employ our technical service troops gainfully during peacetime. It is true that we must rely upon range work, exercises, and maneuvers to train our combat forces; and in at least one peacetime army this is practiced to the fullest extent possible. But for service troops, training should be in performing, not in pretending to perform.

There is a vast reservoir of service troops in CONUS military installations and overseas, a majority of them school trained, who remain in a training category. Admittedly the performance may fall short of that demanded from civilian or civil-service workers, but more effective utilization of their training time will save spaces and money. A recently published book on the Quartermaster participation in World War II emphasizes that QM troops were utilized to the maximum after a brief training period.

In addition, there is considerable duplication between service troops and contract engineers in the highly technical fields. We have sufficient engineers to do the job and, in addition, a military detachment. Frequently, a technical college graduate is trained for one year in electronics, spends nine months with a repair detachment, is discharged, and then returns to the detachment as a contract engineer. The reenlistment rate is less than one percent. The Army has trained the man but the contractor or industry reaps the benefit.

In these highly specialized fields it would be far more economical to inactivate the military teams and rely upon the contract engineers. Since a high percentage of these

(possibly 80 percent) are former servicemen, we do not anticipate any reluctance to their serving in a combat zone. This is usually the argument presented for retaining both contract engineers and military repair detachments.

Similar duplication exists between officers and civilians in logistical installations. The officers are considered as supernumeraries, frequently without due regard for experience, past performance, or future assignment.

THE ECHELON SYSTEM

Our fourth failing is the refusal or reluctance, at least, to part with tradition. Every method we employ today will probably be accepted as uneconomical in the light of our knowledge 50 years hence. It is axiomatic that if we have been doing it the same way for 10 years, it is wrong. But changing one method today is a difficult task.

The cost of maintaining equipment in the Army runs into millions. The value of parts consumed in Ordnance of one army far exceeds the cost of feeding the troops involved. And this is but one service. This cost is increasing at a rate far beyond the increase in food, clothing, or other soft goods.

One of the reasons for this high cost is the adherence to the echelon system of maintenance. A secondary cause is reliance on exchange of assemblies which is inherent in this system. The author has recommended that this be revised, and it has been reported that the echelon system is currently under study on a contract basis by a leading university.

Reduce Evacuation

It is recommended that a reduction from five to two echelons of maintenance be considered. The remaining echelons for a field army would represent maintenance performed by the user and maintenance performed by the army technical service troops. There would be no evacuation from army. Maintenance by the troops would include the present first, second, and part of third echelons; maintenance by the technical services would include remainder of third, present fourth, and a modified fifth echelon. *A greater proportion of equipment should be scrapped. Emphasis should be changed from evacuating to repairing. Evacuating to present fourth echelon is uneconomical. Evacuation beyond fourth echelon is a total waste of money and effort.* For any piece of equipment valued at less than $10,000, evacuation to depot for rebuild invariably involves expenditure greater than the acquisition cost.

Not the least of the advantages of discarding depot maintenance will be releasing those parts and subassemblies refused to lower echelons. Depot maintenance represents a vested interest. As its normal business is reduced, it can divert a greater volume into rebuild shops by upgrading simple operations.

A graph has been prepared (Figure 2) to illustrate these points. Each general purpose vehicle repaired and returned instead of being evacuated in a field army represents a saving of the cost of the vehicle. Recoding the parts from field to base maintenance has caused the evacuation of hundreds of vehicles unnecessarily.

It should be pointed out that the total number of vehicles repaired in field maintenance was approximately 5,000 per month during this period. The saving of approximately 50 million dollars for the period 30 June 1953 to 1 January 1956 was reduced by almost 2 million dollars due to restricting issue of essential parts to depot shops from November 1954 to August 1955.

MANAGEMENT SYSTEMS

The fifth failing which costs untold millions is the reliance upon management systems to solve our problems in logistics. The thinking here is that if one system is good, then five systems are five times as

good. One installation at one time may be implementing half a dozen or more programs: Work Force Analysis, Performance Appraisal, Command Program Review, Minimum Operational Organizations Review and Evaluation, Yardsticks Evaluation, Management Control Intelligence Project, and others.

No installation is complete without a high-priced management staff most of whom have had no operational experience. The paperwork or recordization, to use a newly coined word, has reached astronomical proportions. The management staff expends 90 percent of its effort installing and evaluating systems; there is no time left to observe the operations. In some installations management is called "systems evaluation." *Management may well be the Frankenstein of the Army.*

Late in 1945 the writer was leaving the separation center in the company of a young soldier. When asked what specifically he objected to in the military, he replied: "We don't get nothing done. One man works (presumably himself) while five men measure him." And we have had 10 years of emphasis since them.

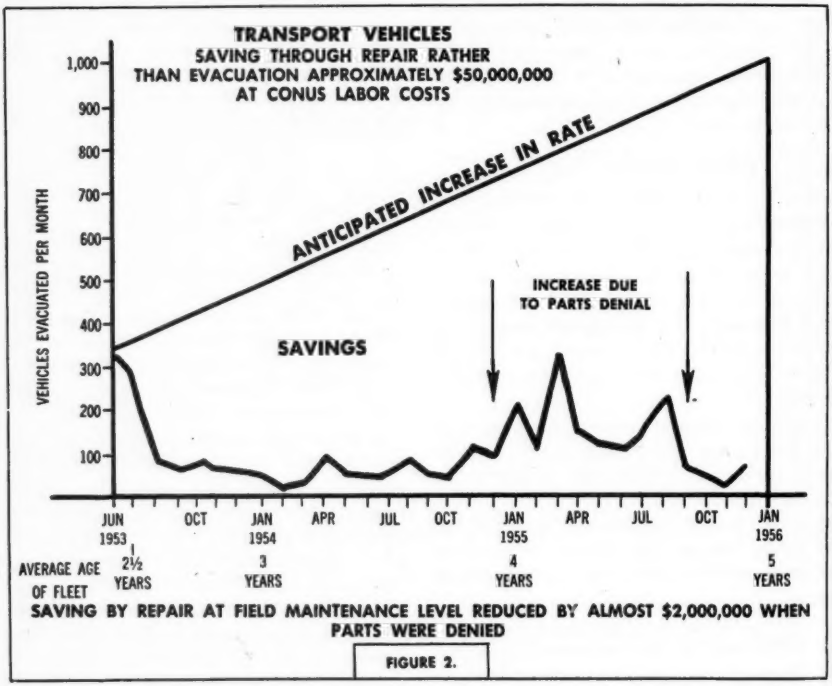


FIGURE 2.

Make Management Pay

I am not discounting the value of management. *We need management. But the management must be directed toward the effort, and the results should be comparable to returns expected by industry for similar expenditure of time and money.* Where one management project might produce tangible returns, a dozen projects create confusion, even chaos.

I do object to the naive approach of the

management experts who prey upon us. One apple-cheeked college professor gives one lecture on management over and over. His thesis is that we should "give a man responsibility commensurate with his ability and position. Then define the area in which he can make decisions. And above all let each man know to whom he reports." Have we never learned the lessons from Moses to Ghenghis Khan to the present? Is Alford's Production Handbook out of print?

Plenty of "Cure-alls"

Another management expert has a one-man medicine show. He brings phonograph records, charts, graphs, and movies into play to sell his method of solving logistical problems. And strangely enough it adds up to the "Estimate of the Situation."

A third, a $50 a day expert who might be classified as a Pentagon commando, capitalized upon appealing to the military mind. Each page of drivel he produced was dressed up in military garb. He was organizing task forces, establishing beachheads, launching a barrage of ideas, designating lines of departure, or indicating reference points for future operations. He scorned work simplification or work measurement as "gimmicks." His particular theme was that logistical managers knew too many things they had no need for, and too few of the things they needed. He proved this geometrically with a triangle. At last report the project has been "folded back into the organization" whatever that may mean.

Those were individual management experts. The present trend in logistics, as in strategy and tactics, is to assign projects to various universities. The universities, in turn, enlist the aid of management consultants, or purveyors of business systems, or both. A costly investigation proves our present system is inefficient. The solution invariably involves scrapping all present methods, good and bad, and installation of the Alpha Beta Company system. The basic faults continue. Everyone benefits but the Army and the taxpayer.

A PIECE OF STRING

The sixth deficiency, which covers a broad field, is the failure to assign a proper value in the labor expended in logistics. All dollars expended for labor may benefit the economy of the nation. Unless such expenditure in the Army is properly controlled, it may not improve national defense. The waste in administration or paperwork has been covered. This applies more to operations, the physical labor involved.

De Maupassant points up the value of a piece of string to a Frenchman in the 19th century. The same is true in many backward countries today. Tin cans, paper, leather, and scraps of metal are carefully conserved. Labor by comparison has little value. Expenditure of untold man-hours is justified to restore to serviceable condition items which have small intrinsic value.

Labor in the United States is a commodity more precious than all but a very few substances. The Army has lagged behind industry in accepting this premise. We continue to repair batteries long after experience indicates this procedure is not economically sound. We persist after experts from industry point out the fallacy. And this example is being repeated in thousands of instances.

This sixth deficiency then is the failure to accept the obvious fact we can frequently save by being extravagant in rear area logistical installations. This does not apply to combat areas.

A NEW APPROACH

As one means of improving the situation, I suggest the negative approach. *Let us forget about better ways of doing the present logistical job and concentrate on eliminating as much of it as possible.* Let

us stop doing the useless things, the five-echelon type of procedure.

One logistical installation reported $50,000 a year saved by reclaiming wooden packing boxes. When a check indicated no used boxes ever passed over the shipping line, further investigation revealed that the rebuilt boxes went from the shop to three or four box yards and eventually back for scrap or further rebuilding. Not one was being used for outshipment.

Reducing the employees in this activity from 14 to two, and moving it to the packaging line, forced the use of some boxes for domestic shipments. A study of the commercial activity led to discontinuing the boxing of goods for domestic customers, eliminating the project. Where was that $50,000 saved?

At a time when one Government agency (not the Army) was lauded for saving thousands of dollars by baling and selling mixed scrap paper, a study at this same installation revealed that cost of handling and baling was at least twice the gross return. It was discontinued.

Solve Problem Backward

We might work the problem backward. Take the commercial depot which we used earlier for our comparison and adopt it as our standard. Allot to logistical installations two, three, or even five times the money and men it would require to operate as a commercial activity. And, above all, think and calculate in terms of total costs. This may force a change in our methods and procedures.

Several logisticians have proposed group incentive award programs. One or two programs have been adopted. Now with labor unions in accord with this concept, which is not to be confused with the piecework or the speedup, prospects are brighter for its success. If industry and labor can get together on productivity clauses, there is hope for Army installations. As Lincoln points out in "Incentive Management" only 40 percent of plans are successful, but it is worth the trial. A recent magazine article reports excellent results in the city of Baltimore with a group incentive program for municipal workers.

SUMMARY

This article is not presented as a definitive study. By restricting the analysis to those fields with which we are personally familiar, important areas such as research and development, procurement, and ports of embarkation have been ignored. Neither have we attempted to evaluate waste in millions nor billions of dollars, nor in percentage of the appropriated dollar. We leave that to your imagination.

We have attempted to prove that the present strength of the combat forces is not commensurate with funds expended. The losses in logistics are staggering, and the time to concentrate on stopping this waste is now, before the impact of successive reductions poses insurmountable problems. Fears of "across the board" cuts which penalize the good and bad activities alike add to present excessive costs. An adequate program will not only eliminate the fat we all retain as a protection against this "across the board" cut, but will enable us to reverse the present trend. Possibly we can even increase the combat forces in the face of reduced appropriations, more modern divisions with less money.

CONCLUSION

It would be gratifying if these problems could be solved with a 10-point or 14-point program. Those who have labored mightily in an attempt to put across just one simple proposal designed to reduce costs in the field of logistics will understand the problem of providing an acceptable program and possibly will sympathize.

Nevertheless, realizing that the next few years will be critical, the following guideposts are offered. Reorganization is not specifically recommended. Organiza-

tion is not the principal deficiency, and reorganization is not necessarily the solution.

1. Stop talking and worrying about the taxpayer's dollar and concentrate upon the Army dollar. Let the logisticians accept the responsibility, as managers, of finding the most efficient (and cheapest) way of providing the maximum defense with the appropriated dollar. This is not the responsibility of the soldier, nor of the civilian employees, nor of the comptroller, nor of the Incentive Awards Committee. It is the logisticians'.

2. Analyze logistical operations in terms of the over-all effort, not piecemeal. For the present functional appraisal of efficiency, substitute a formula which will compare total costs to output for a given activity. In effect it will substitute for a profit and loss statement.

3. Close out losing, marginal, or unnecessary operating establishments. Make necessary allowances for military requirements for dispersion, but break out these strategic costs and fund separately. If concessions are necessary to relieve distressed labor areas or to provide "made work," these projects also should be funded separately.

4. Accept the premise that the present logistical system is grossly inefficient and stop wasting more money reassessing the degree. Then establish a moratorium on management systems until we digest a few currently in vogue. Dispense with $50 a day experts who preach old maxims and expound on textbook doctrine.

5. Divorce the strictly military from the civilian type activities within logistics and vary the procedures accordingly. Instill some of the military compulsion into the civilian activities, but cut out the "spit and polish" or disciplinary measures from civilian type activities once and forever.

6. Employ service troops for intended purpose after a brief training period. For those fields such as electronics or special weapons which require an exceptionally high degree of intelligence, education, or training, substitute contract engineers for the military. Let the Army stop training men in specialized fields and then reemploying them through contract engineering firms at fantastic prices.

7. Eliminate, if possible, or reduce the number of echelons of maintenance, supply, and management. Utilize assembly lines or increased automation when the volume dictates, not merely to pretend to an efficiency not substantiated by cost figures.

8. Establish reasonable standards of performance to ensure costs comparable to what industry would pay for similar products. Restrict individual incentive or efficiency awards to those which indisputably reduce product costs below the established reasonable standard.

9. Encourage group incentive programs in all logistical establishments similar to those sponsored by unions in industrial plants (productivity clauses) and some city governments.

10. Eliminate the pipeline complex and the complex pipeline.

MOVING?

If you are moving, please notify the MILITARY REVIEW, Fort Leavenworth, Kansas, of your change of address. Be sure to include your name, *old* address, and *new* address.

Observations on Military History

Brigadier General Paul M. Robinett, *United States Army, Retired*

A general staff officer who has not become a military historian is a poor risk in any higher headquarters.

BY WAY of example, historians of the Office of the Chief of Military History after months of delving into the Hawaiian disaster of 7 December 1941 have not found one bit of information to show that any responsible intelligence officer had spotlighted the *capability* of Japan to make a surprise attack upon United States territory. Apparently neither these intelligence officers nor their superiors were familiar with the profound change in intelligence techniques that had taken place in the Army subsequent to the time they had completed the course at the Command and General Staff School. They believed that Japan *intended* to expand southward and to attack Thailand. No better historical example can be found of the danger inherent in trying to divine a potential enemy's intentions.

Ignoring the lessons of history the Army now seems to be returning to the system of intentions rather than capabilities. Other Pearl Harbors are lurking in the shadows ahead, and a thorough knowledge of history may enable the military student to penetrate the obscurity even though some figurative Iron or Bamboo Curtain may deny intelligence equal to that available before the Japanese raid upon Hawaii became history.

There are several definitions of history and of a historian, which in a broad way apply to the military profession, but new ones of particular application to Army officers who have qualified for general staff or important command assignments seem to be required. They are:

Military History: A systematic presentation of military facts, accompanied by an analytical explanation of their causes.

Military Historian: One versed or well-informed in military history.

If these definitions are accepted, all general staff officers must be military historians for they are constantly developing, arranging, and analyzing the facts bearing upon military problems. This work inevitably leads them to become "well-versed in military history." Besides, Army officers are making military history throughout their active service.

The value of history in military education has been recognized in the United States Army for many years. It has been at the base of tactical and strategical instruction in the service schools and colleges almost from their inception.

For instruction in minor tactics, however, the older wars are no longer of great value because of the radical changes that have occurred in weapons. But the grand tactics and strategy of the older wars are as useful today as ever before. At this level no war in our history can be studied with more profit than the Civil War.

An understanding of American military history is vital to the development of *esprit de corps* and morale, to the training of troops, to the development of leadership, to a comprehension of the principles of war, to the direction of an effective military intelligence effort, and to military planning—any one of which is vital to the achievement of great results.

Thucydides, a minor general in the Athenian Army, wrote the first great military history in about 400 B.C. Lieutenant General Stanley D. Embick, who was a close advisor to General George C. Marshall during World War II, once remarked that he constantly referred to Thucydides' book because the conflicts between the Greek states during the Peloponnesian wars were so similar to the conflicts in western Europe that it could serve as a guide.

Challenge the Principles

Since Thucydides' time many other military men or statesmen such as Caesar, Machiavelli, Frederick, Napoleon, Von Moltke, Von Schlieffen, and many others have recorded their observations on war. Military students of many nations have studied these works and have analyzed the campaigns of the "great captains" with a view of determining the fundamental principles underlying the conduct of war. Jomini, Clausewitz, Ardant du Picq, Mahan, Foch, Douhet, and Fuller have been foremost in this analytical work. From their studies and others have evolved the fundamental principles of war. Although these so-called "immutable principles of war" still stand, military students of today should not be complacently idle. The principles should be under continuous investigation in the light of new case studies developed from more recent wars.

Patriotism Is Fundamental

At the very base of the problem of morale is patriotism or love of country—the cement that binds a people together and sustains their armies. The founders of the United States laid a solid spiritual foundation for Americans in two great documents—the Declaration of Independence and the Constitution. In these papers are recorded the ideas and principles upon which American patriotism must be built. Inspiration gleaned from these instruments should be reinforced by a knowledge of our history, particularly of our military history. An officer who examined all former prisoners of war on his post who had successfully resisted the Communist enemy's efforts to break them down has written that invariably these men attributed their steadfastness to a knowledge of American history.

But, alas, both the basic documents and American history have been neglected in the schools. The Army itself has neglected both documents and American military history. Too many times in the past the solemn oath of an officer has been taken by those who have never even read the Constitution. The Office of Military History recently has undertaken a project that should improve the situation with regard to history. A new text, *American Military History: 1607-1953*, has been prepared for use in the Reserve Officers' Training Corps and in the Army Extension Course Program. This primer should prove of value even to officers at the general staff level.

Officers can foresee their future roles in war better than those who some day will be their superiors, and should prepare for the supporting roles of advisors to civilian authorities and to the American people

Qualified Advisors Needed

In the United States the direction of the Armed Forces is vested in the civilian Chief of State or President, and policy matters in the Congress. The Executive and the members of Congress are elected to office and often have not been trained or soundly experienced in military affairs. This lack of military background has been

at the base of many historical differences between soldiers and statesmen throughout American history.

The British General Sir Frederick Maurice points out in his book, *Governments and War*, that many of the differences between statesman and soldier have arisen because of a misconception of what is meant by the conduct of war. Military men frequently have thought of it as the direction of the armed forces in actual operations only. This view is much too narrow for it has come to imply the direction of the entire power and resources of the nation in pursuit of national objectives and their coordination with allies.

The soundest preparation for an understanding of the delicate relationship of statesman and soldier and of their mutual problems in the conduct of military affairs can be made by studying history—particularly American history of the periods preceding, during, and following national emergencies.

Unfortunately, future statesmen rarely are sure of their place in sufficient time to make the necessary preparation. Officers of the Armed Forces are in much better position to foresee their future roles in war than these unknown ones who some day will be their superiors. Officers should, therefore, conscientiously prepare themselves for the supporting roles of advisors to the paramount civilian authorities and as instructors to the American people.

Man Is Primary Weapon

Field Marshal Archibald P. Wavell, a British soldier-philosopher, in his book, *Soldiers and Soldiering*, has said that "military history is a flesh and blood affair." All authorities agree with Wavell that it is man, the wielder of weapons and the master of machines, who makes war. By study and experience an Army officer must become a practical psychologist. Le Bon's *The Crowd* and Ardant du Picq's *Battle Studies* are classical works worthy of close examination by military men. Bolton's *The Private Soldier Under Washington*, Bell Wiley's *The Life of Billy Yank* and *The Life of Johnny Reb*, and S. L. A. Marshall's *Men Against Fire* also are worthy of close study.

But in using such books a word of caution is in order. Anyone who has worked with personnel records will recall that fighting men who have been investigated or tried by court-martial leave voluminous records behind them while soldiers who have consistently done their duty have left very few. Books which purport to establish the thinking and activities of the fighting men are, therefore, heavily loaded on the side of the derelicts. If the literature dealing with fighting men is to be studied with profit, the student must analyze, evaluate, and judge the qualities of both fighting men and their leaders with due regard to the circumstances and conditions under which they worked.

Leadership Essential

Leadership is the very foundation upon which a successful military career is built. Therefore, all officers should study it assiduously, for as Major General Baron Hugo von Freytag-Loringhoven, who first developed the technique of teaching leadership by the applicatory method, wrote in his book, *The Power of Personality in War*, "There is no profession in which

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personality training is more important than in the military." In undertaking this study the general principles of leadership should be mastered first and then the biographies and memoirs of past military leaders should be read critically with a view of determining the reasons for the successes or failures of the individuals concerned. It should be noted, however, that the traits and methods of each leader were unique to himself and are not entirely suitable for anyone else.

All officers have heard many lectures on leadership by men who have made their mark in the military profession, and most have read some of the vast literature on the subject. Rarely, however, have we the privilege of reading the ideas of a major on leadership and later observing him carry out those ideas in war as an army commander. George S. Patton, Jr. not only demonstrated that he had made a painstaking study of the great military leaders, but practiced in World War II the ideas he publicly charted for himself in an article entitled "Success in War" published in the *Cavalry Journal* of 1931. Those who knew the general can visualize the warlike gestures he must have used as he drove home the thought:

Hannibal, Caesar, Heraclius, Charlemagne, Richard, Gustavus, Turrene, Frederick, Napoleon, Grant, Lee, Hindenburg, Allenby, Foch, and Pershing were deeply imbued with the knowledge of war as practiced at their various epochs. But so were many of their defeated opponents: For . . . success in war lies not wholly in knowledge. It lurks invisible in that vitalizing spark, intangible, yet as evident as the lightning—the warrior's soul.

Those who worked for General Patton believe that he drew heavily upon the pages of history to reinforce both his knowledge of war and his warrior soul. But, without minimizing his outstanding performance, Patton could have done better if he had read American military history a little more carefully and had modeled himself in the pattern of General Washington.

A word of caution is in order concerning histories or biographies written during the lifetime of the participants or too near their era. Such works are generally watered-down accounts of events, tinged with prejudice, colored by self-interested flattery, or influenced by the selective treatment of source material. On the contrary, histories or biographies written too long after the time of the participants frequently are fictional or sentimental. History, therefore, cannot serve as an entirely satisfactory basis for instruction in leadership until it portrays the participants whole—their merits, deficiencies, temperaments, ambitions, tensions, contrasts, and Janus faces, and their physical and mental conditions.

Learning From Vanquished

The eminent American naval historian, Admiral Alfred T. Mahan, in his book, *Naval Strategy*, has said, "It is from the records of the beaten side that we are most surely able to draw instruction." It is also infinitely better to learn from the defeats of others than from experience. Therefore, it is advantageous to study and analyze the records of the vanquished and to observe what some of them have done to prepare for the next war. The victors, in their conceit, are apt to pass over unfavorable matters and take the position that no mistakes were made. For example, what a false sense of might pervaded the French and British as they faced newly rearmed Germany in 1939. It even impressed American observers who reported the French Army as the strongest in the world on the eve of the disaster of May 1940. The impressive victories won by Germany at the beginning of World War II grew out of a series of historical studies to determine why she had lost World War I. Based upon those studies a new model

army was created while France and Great Britain, and the United States too for that matter, maintained outmoded armies quite similar to those with which they won World War I.

Adjustment to Conditions

One of the most important lessons a military student can learn from history is the necessity of quickly recognizing the changes in tactics and techniques that are indicated during the course of a war, and especially during the meeting engagement. It is at those times that secret weapons and differences in tactics and techniques show up most clearly and require immediate adjustment to conditions on the battlefield.

The adjustment that followed the initial contact of American armored troops with German troops, equipped with more powerful guns, and closely supported by the Luftwaffe in North Africa during World War II, is a good example illustrating the point. The time allowed for such adjustment in the future will be far shorter than in the past just as it was shorter in World War II than in World War I. France and Great Britain did not have the chance to make the adjustment in 1940, and only the English Channel and the productive capacity of the United States made it possible for Great Britain to make the adjustment at all.

An officer should not allow personal experience or the experiences of the United States Army to limit his point of view but should strive to acquire the experiences of other individuals and armies. Conclusions and principles based on personal experience or an inadequate preparation in military history are very dangerous. Recognizing this fact the Office of the Chief of Military History asked the former German Chief of Staff, General Franz Halder, and his group to comment on the draft of a new Field Service Regulations. The vast experience of the former enemy army on the Eastern Front was thus made available to the authors of the new regulations.

German and US Use of History

The old German Army was both feared and respected. Military history was considered the seedbed of intellectual life within that army. General Halder has said:

For the general staff military history served merely as a basis for the more important mission of distilling therefrom an understanding of the nature of war in the fields of state policies, psychology, and command techniques, and for exploitation as the only source from which lasting lessons could be learned in the art of strategy.

Although assisted by numerous civilian scholars, the work of the German Office of Military History was done by general staff officers. Accordingly, most of the higher troop commanders who attained fame in World War I and their chiefs of staff had been through the military history branch of the general staff.

Although in some respects the Office of Military History of the United States Army has advanced far beyond the concepts of the old German Army, it has not won for itself the position held by the German historical branch. Most officers serving in our historical office are performing merely administrative duties. None have ever undertaken strategical studies, but several have made important studies on recurring staff problems. Notable among these are Lieutenant Colonel Marvin A. Kreidberg and Lieutenant Merton G. Henry's *History of Mobilization in the U. S. Army*, and companion works on the *Personnel Replacement System* by Lieutenant Colonel Leonard L. Lerwill, and *History of Personnel Demobilization* by Major John C. Sparrow.

The histories of operations against Germany in World War II are based upon

the documents of both sides in the conflict, supplemented by interviews of the principal participants. They constitute the first definitive history produced so near to the events described, but they sometimes fail to record the strains of battle upon the leaders or their effect upon the outcome. In addition, the events described in the volumes have not always been subjected to "the tracing of effects to causes" and "the testing of the means employed," which Clausewitz describes as the ultimate goals of historical studies.

Specialized Historical Study

First Lieutenant Matthew F. Steele has quoted an earlier military historian, John C. Ropes, as having observed that ". . . few Army officers had built upon the beginning made in the Military Academy" and that, consequently, there were no professional soldiers. But Steele, who is best known for his book, *American Campaigns*, writing in 1895 observed that this was not true in his time. Steele attributed the United States Army's increased interest in military culture to the establishment of the service journals beginning in 1878; to the founding of the School of Application for Infantry and Cavalry, the predecessor of the Command and General Staff College, in 1881; to the establishment of the Bureau of Information, the predecessor of the Military Intelligence Division of the General Staff; to the War Department order establishing lyceums; and to the act of Congress requiring examinations for promotion and granting a liberal allowance for the shipment of professional books.

Steele noted, however, that officers "do not study with the determination of fitting themselves for some particular duty, either of the present or the future; not even for knowledge or the power there is in it," and concluded that "we should always have some special object to study for." Whether General Patton knew it or not, he followed Steele's advice and probably Field Marshal Wavell's also. It would be interesting to know whether Wavell's lackluster performance in war can be attributed to hard luck or to the shallowness of his study. In *The Good Soldier* he has said:

> *When you study military history don't read outlines on strategy or principles of war. Read biographies, memoirs, historical novels. . . . Get at the flesh and blood of it, not the skeleton.*

At any rate Patton specialized on leadership although he is known to have read more deeply. Here are the ideas he expressed in 1931:

> *In acquiring erudition we must live on, not in, our studies. We must guard against becoming so engrossed in the specific nature of the roots and bark of the trees of knowledge as to miss the meaning and grandeur of the forests they compose.*

Basic Historical Preparation

Regardless of specialized study, important though it is, there is a minimum basic preparation in military history which should be made by all Army officers. This study should be progressive and should be based on a solid understanding of the Army's past accomplishments, the American soldier, the leadership of American troops, and small unit actions. Having made such initial preparation an officer can build upon his own experience vastly greater experience acquired from others which he can apply immediately in his daily work. An officer's study should be extended to the higher commands and more complex subjects as his experience and rank advance him into assignments of greater responsibility. But as he reaches this stage in his career he will be tempted to follow the cult of the so-called "great men" and read detective stories only. *American Military History: A Guide*, soon to appear, is entitled to a place on the work shelf of every officer because of the insight it provides into the basic sources of American military history and into a proper course of study.

Today, every element of national strength—ideological, spiritual, psychological, political, financial, economic, technological, and military—is involved in war and in the preparation for war. Accordingly, military men who are responsible for advice on national defense and strategy should be versed in the broader aspects of peace and war and should bring to their task a balanced judgment. As Jacob Burchardt has pointed out in his book, *Force and Freedom*, the history of our country should be considered in parallel with that of others and in relation to world history and its laws—a part of a greater whole. This will require an understanding of the histories not only of existing nations but of those, once powerful, but now gone forever. The British historian, Arnold J. Toynbee, in his book, *Civilization on Trial*, has written:

. . . the lessons of history . . . would be like a navigator's chart, which affords the seafarer who has the intelligence to use it a greater hope of avoiding shipwreck than when he was sailing blind, because it gives him the means, if he has the skill and courage to use them, of steering a course between charted rocks and reefs.

Above everything else, however, American military men should acquire knowledge of their own land and its people and of its military history. Without this fundamental knowledge decisions might sooner or later transcend the practical and realistic. This could result in national catastrophe.

Changing World Situation

Initially, the American military system, taking advantage of a favorable geographical position behind the ocean barriers and the balance of power existing in the outer world, based its military system on a small standing army bulwarked by citizen-soldiers and temporary alliances in extraordinary emergencies. Later, a modern navy was included in the system. But since World War II the intransigence and military might of Soviet Russia and the destruction of the balance of power in Europe and the Far East have caused a complete change in the American military system.

The United States is now compelled to maintain large air, sea, and land forces ready for immediate action, to maintain permanent alliances or military commitments with 44 other nations, and to participate in an arms race that imposes an enormous burden upon all classes of American citizens. These revolutionary developments, together with the Communists' clever use of every old rivalry, claim, or hate in advancing their program of world domination, increase immeasurably the responsibilities of military men—responsibilities that can be met only by dedicated individuals who are constantly in the pursuit of knowledge that can be applied in practical affairs.

This, then, is the burden that rests upon all officers, particularly those who have reached the general staff level, even in peacetime, because as the former Chief of Staff, General Malin Craig, has said:

. . . what transpires on prospective battlefields is influenced vitally years before in the councils of the staff and in the legislative halls of Congress. Time is the only thing that may be irrevocably lost, and it is the first thing lost sight of in the seductive false security of peaceful times. . . .

The future of our country and of the free world may well depend upon how successfully the American general staff solves its problems.

A Soviet Attack Capability

Walter Darnell Jacobs

KHRUSHCHEV and his lessers are engaged in a great campaign to demonstrate that the "man of steel" had feet of clay. The effects of this doctrinal *démarche* are not without considerable significance to Western military planners.

The principal device in the denigration of Stalin was the speech which Khrushchev delivered on 25 February before a closed meeting of the 20th Party Congress of the Communist Party. This speech, previously secret, has since been released to the public in apparently accurate form by the State Department.[1] It attributes the great German victories of 1941, including the advances on Moscow and Stalingrad, to the "military genius" of Stalin.

The fault in Stalin, according to Khrushchev, was that Stalin was surprised.

The principle of surprise, in the military doctrine of the West, is one of the cornerstones of tactics and strategy. In fact, at times it has seemed as if the professional brotherhood of arms has been more ready to forgive defeat than to forgive being surprised.

Soviet Principles of War

Until recently, at least, the same was not true of Soviet military theorists. The principle of surprise, as such, was not included in the Stalinist doctrine on military theory. In Stalinist doctrine the principles of war consisted of the following "permanently operating factors":

1. **The stability of the rear.**
2. **The morale of the army and the homefront.**
3. **The number and quality of divisions.**
4. **The equipment of the army.**
5. **The quality and capability of the command personnel.**

(Marshal Voroshilov has suggested the addition to the above list of the matter of adequate reserves.)

The most that Stalinist theory allowed itself to say on the subject of surprise in military operations was that it was a temporarily operating factor. Its significance in military operations was supplementary and subordinate to the permanently operating factors.

Even the most cursory contrasting of the Stalinist principles of war with those of the West (the objective, simplicity, unity of command, the offensive, maneuver, mass, economy of force, surprise, and security) is instructive. It should be emphasized, however, that the resultant instruction comes on the theoretical plane.

Stalinist theory does seem to downgrade the importance of surprise. The Red Army was apparently caught asleep at the switch by the Wehrmacht in June 1941 (as were Russian Imperial forces in 1905).

Now Emphasizing Surprise

One should recall, nevertheless, that the tactics and strategy of the Soviet Union in World War II were certainly not devoid of the use of surprise. Nor should the as-

[1] *The New York Times*, 5 June 1956

There is nothing new in the current USSR Party Line thesis that war no longer is fatally inevitable—except the Soviet leaders' invitation to the democracies to be volunteer pallbearers at their own funeral

sault into the Republic of Korea in June 1950, a surprise attack in the classical sense, be overlooked.

The point that can be made from a comparison of Stalinist principles of war to Western principles of war is the one made, by indirection, by Khrushchev; that is—an army that may be surprised, will be surprised.

Khrushchev does not say that the Germans were able to threaten Moscow because Stalin evolved his five permanently operating factors. He suggests, rather, that Stalin placed the Soviet Army in a position in which it could be surprised with the almost inevitable result that it was. It is implicit in the Khrushchev utterances that the reasons for the failure in practice are not independent of erroneous theory.

The traditional Marxist striving for the unity of theory and practice operates to condition the actions and thoughts of Communists. Thus the remedy to the errors of the Stalin era must be sought not only in practice but also in theory. Khrushchev is clearly saying that Stalinist military theory was faulty.

Post-Stalin writings by military leaders had reached the same conclusion earlier, if less dramatically.

Surprise Vital to Aggressor

Early in 1955 Marshal Sokolovsky made an attempt to emphasize the importance of surprise in modern warfare. Writing in *Izvestia* of 23 February he maintained that recent developments in the science of warfare made it imperative that the "aggressor" be deprived of the benefits accruing to him from the element of surprise. Merely to be prepared for the blow and then to trade attacks with the "aggressor" was no longer enough. Marshal Sokolovsky's article, while not openly challenging the validity of Stalin's permanently operating factors, attacked them, so to speak, by infiltration. Surprise is transformed from a temporarily operating factor into the basic principle of modern warfare.

Marshal Rotmistrov, Commandant of the Stalin Armored Forces Academy, followed the Sokolovsky article with an article in *Krasnaya Zvesda* of 24 March directly attacking Stalin's permanently operating factors. Marshal Rotmistrov stressed the element of surprise. He stated that the existence of atomic weapons makes the element of surprise paramount in the starting of a war as well as during the course of a war.

The emphasis on surprise, implicit in the Khrushchev speech and explicit in the articles of Rotmistrov and Sokolovsky, takes further significance when viewed in conjunction with American and Soviet discussions of atomic war as "the end of civilization."

From the Western viewpoint, the Geneva Conference of Heads of Government of July 1955 seems to have been interpreted as a sort of gentlemen's agreement not to engage in war. Mr. Harold Macmillan of the United Kingdom voiced what has come to be the view of a large section of Western opinion when he said, upon returning to London from Geneva, that, "There ain't gonna be no war."

Atomics Will Not End War

A similar body of opinion had also developed, even before Geneva, in the Soviet Union. An editorial in *Kommunist* of March, however, attacked the idea that an atomic war meant the end of civilization.

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Such an idea, maintained *Kommunist*, was simply "grist to the mills of the American Imperialists." The conclusion must be that "however hard the consequences of an atom war . . . they must not be identified with 'the end of world civilization'." There would be a victor in atomic war and if there were any doubt as to the identity of that victor, *Kommunist* spelled it out for its readers by comparing "the human forces, the immense material resources, the external allies, the moral and political support given by the popular masses" on the side of the Soviet Union to the paucity of strength available on a long-range basis to "the United States—the chief country of the camp of imperialism and war."

This line of *Kommunist* has been identified to some extent with the since-deposed Malenkov. The public speech of Khrushchev at the 20th Party Congress indicates, however, that it is still the line of the Kremlin incumbents.

As reported by *Pravda* on 15 February 1956, Khrushchev said:

It is not by chance that in recent days prominent bourgeois figures more and more often frankly admit that there can be 'no victor in atomic war.' These public figures still do not venture to state that capitalism will find its grave in a new war, should it unleash one, but they are forced openly to admit that the Socialist camp is invincible!

To Khrushchev, then, atomic war does not signal "the end of civilization" but the invincibility of the Socialist camp. In this light his pronouncement that the goals of the Communist Party in international affairs include the taking of measures "for the further strengthening of the defense potential of our Socialist state" and for the maintenance of "our defenses at the level demanded by contemporary armament and science" takes on added significance.

Economic Competition Only

The true meaning of "defense" in the double-speak vocabulary of communism should be clear. Dmitri Shepilov, who has since become Minister of Foreign Affairs of the Soviet Union, elucidated its meaning when he instructed the 20th Congress how to distinguish between a warmonger and a peace fighter. He said:

The Soviet state and all the countries of the Socialist camp propose that the advantages of both [Socialist and Capitalist] systems should be tried in competition in the arena of peaceful economic construction and not on the battlefield. He who rejects this principle is really advocating war, no matter how often he try to sing the tune of 'peace' or the latest formula —'peace on the brink of war.'

Shepilov thus asks all to accept the Communist contention that economic considerations are determining in all aspects of life. To Shepilov, those who may reject such a thesis are 'really advocating war.' Thus advocating war does not consist of advocating war but in denying that the advantages of different systems can be measured by economic competition.

The fact that adherents to Western political systems may believe that those systems may possess some advantages over communism in noneconomic fields (for example, political, spiritual, and individual freedom) is not pertinent. If one does not accept the Shepilov gambit that the only differences between communism and democracy are economic, he is, *ipso facto*, advocating war.

Try Other Means First

The 20th Congress added a further fillip. To the Shepilov challenge to economic competition and the Khrushchev public boast of the invincibility of socialism in an atomic war was appended the "new" thesis that war is no longer a fatal inevitability. *It was said, in effect, that*

even though the camp of socialism is invincible, war is not fatally inevitable because the transition from capitalism to socialism can be worked peaceably, providing the will of the Capitalist to resist the transition is broken by means other than war. From this thesis the Congress developed the tactics of the popular front and parliamentarianism. If the Capitalists resist the transition to socialism (and, to the next step, communism), then war may result. This war, in the Communist view, is not inevitable but will only come about if the Capitalists are so shortsighted as to resist the inevitable "transition."

There is nothing new in the 20th Congress thesis that war is no longer fatally inevitable. The only thing that is new is that Shepilov and Khrushchev are inviting the democracies to be volunteer pallbearers at their own funeral.

Analyze the Indications

An examination of the indications set out here will lead to the determination of a capability. This capability, it should again be emphasized, will be a capability which exists within the limits of Soviet theory. This is, of course, a quite different matter than determining a capability which is "theoretically possible." A capability which exists within the limits of theory is certainly theoretically possible, but a capability which is theoretically possible is not necessarily within the limits of Soviet theory.

The following indications have been established:

1. The Soviet leaders are engaged in an energetic drive to deprecate Stalin and many aspects of Stalinism.

2. Stalinist military doctrine has been attacked by leading party and military figures.

3. The element of surprise as a factor in the beginning of a war or as a factor during war has been transformed from secondary status to primary importance.

4. Modern science and armaments make it necessary to deprive the "aggressor" of the advantages resulting from delivering the first blow.

5. Atomic war does not mean the end of civilization. Even in atomic war a victor will emerge.

6. Those in the camp of "imperialism and war" who refuse to accept the challenge to decide *all* issues by economic competition are, in fact, advocating war.

7. It is the duty of all Communists to provide salvation to the workers of the world by striving to assist in the inevitable transition, everywhere in the world, to socialism.

8. The Socialist camp is invincible.

Soviet Attack Capability

A consideration of these indications, taken in conjunction with one another, leads to the statement of the following capability within the limits of Soviet theory:

The Soviet Union can deliver a surprise attack now with atomic and hydrogen weapons anywhere in the United States.

The physical capability of the Soviet Union to implement this capability and the strength in which she is able to implement it are determinations that can be made only by the examination of other indications. From the indications instantly available to us, however, the stated capability is a realistic one within the limits of Soviet theory.

Freedom is never preserved for long except by vigilance and with dedicated effect. Those who do not have the will to defend liberty, soon lose it.

Secretary of State John Foster Dulles

DETAIL IG--DROIT ET AVANT

Lieutenant Colonel Eugene Smith, *Inspector General*
Executive Officer, 77th Special Forces Group (Airborne)

YOU may be in one of three categories. You may be an inspector general, eligible for the detail or not eligible. This poses the question: What is an inspector general and what does he do?

The mission of The Inspector General has not changed basically during the 178 years since Major General Baron Frederick von Steuben first served as The Inspector General on the staff of General George Washington.

His duties at that time were:

To muster the troops, observing the number and condition of the men, discipline, drill, state of arms and equipment, clothing, rations; to reject unserviceable recruits and discharge or transfer to the invalid corps all men disabled in the service; and to report all abuses, neglect, and deficiencies to the Commander in Chief, the commander of the organization, and the Board of War.

General John J. Pershing, in a report to the Secretary of War on 20 November 1918 concerning activities during World War I, stated: "The Inspector General's Department has risen to the highest standards, and throughout has ably assisted commanders in the enforcement of discipline."

Prior to World War II and the expansion of the military services, there were only 60 officers in the department. By early 1945 the number had increased to 1,438, but today there are less than 700 officers assigned as inspectors general.

Broad Duties

Today, The Inspector General's duties are:

To inquire into and report upon matters which pertain to the discipline, efficiency, and economy of the Army Establishment; and to make such inspections, investigations, surveys, studies, and reports as may be prescribed by law or regulations or as directed by the Secretary of the Army or the Chief of Staff.

The mission of inspectors general on the staffs of commanders of commands, installations, or activities subordinate to the Department of the Army, or on the staffs of the heads of the Technical Services, is to keep their commanders or chiefs advised of inspector general activities within the commands; and to conduct such inspections, investigations, surveys, and studies as are prescribed by regulation or law or as directed by their immediate commanders.

It is the mission of inspectors general to report their findings with strict impartiality; to report specially meritorious performance of duty; to make recommendations for the correction of irregularities and deficiencies; to suggest ways and means to improve conditions; to receive, inquire into, and report to appropriate authority the complaints or

Fortunate, indeed, is the inspector general who finds himself serving on the staff of a commander who knows, understands, and believes in, and also makes full use of, the activities of an inspector general

grievances of individuals of the Army Establishment; and to protect the best interests of the Army and the rights of its individual members.

The Inspector General's history, tradition, and mission are symbolized by the three-part insignia of the department. The sword occupying the foundational position represents military power and justice;

the fasces, consisting of a military ax inclosed within a bundle of birch or elm rods tied together with a strap, historically symbolize authority; and the wreath of laurel branches and leaves tying the sword and fasces together is symbolic of academic and intellectual achievement. Superimposed upon the wreath in blue is the French inscription *Droit et avant*, the literal translation of which is "right and forward," or freely, "first be right, then take action." Blue stands for truth, loyalty, faith, and fidelity.

What are some of the assignments an officer might receive as an inspector general?

He might be detailed as an inspector general for a post, division, corps, or army; on the staff of The Inspector General, Department of the Army; for a technical service; or in a field office.

What might his specific duties be?

He might find on division level that in a single day his staff hears complaints, accomplishes inspections of units in the administration, supply, morale, and training fields, and conducts an investigation. Each of these activities would have been directed by the commander upon whose staff he is serving.

Experience Needed

What are some of the characteristics of a good inspector general?

Professionally he must be thoroughly familiar with his duties as an inspector general because his opinions, judgments, and decisions must be accurate, just, unbiased, and irrefutable. He must realize he is not a snooper nor does he issue punitive decisions. He guides, assists, and recommends with a view toward the improvement of the activity he inspects.

Personally he must be neat of dress, clean of habit, courteous, considerate, and kind to a superlative degree. He must be temperate and an exponent of military courtesy, discipline, and customs of the service. He needs a keen memory and his attitude must reflect pride in his assignment as an inspector general.

Where does he fit into the staff of a command?

The best answer to this is found in Field Manual 101-5, *Staff Organization and Procedure*, which states: "The inspector general is under the immediate direction and control of the commander of a command, installation, or activity

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Lieutenant Colonel Eugene Smith is a graduate of the University of New Hampshire. He attended the Advanced Course of The Artillery School in 1947-48 and took the Basic Airborne Course with the 82d Airborne Division in 1955. During World War II he served in Europe. Subsequent military assignments include service as Assistant Army Inspector General, Headquarters Sixth Army, and Inspector General, 45th Infantry Division in Korea. In August 1955 he became Corps Inspector General, Headquarters XVIII Airborne Corps, Fort Bragg, North Carolina. He assumed command of the FC-3 Team in the 77th Special Forces Group (Airborne) in February 1956, became executive officer of the group in July, and now is on special duty as executive officer of the Psychological Warfare Center, of which the 77th Special Forces Group is a unit.

on whose staff he serves." He does not report to nor is he directed by any other member of the staff, although he works closely with all staff sections in all activities pertaining to the inspector general.

By virtue of the fact that the duties of an inspector general encompass all activities of a command and may involve the determination of the efficiency of any member of the command, he is not placed under the operational or administrative control of any staff section of the headquarters.

Confidential Agent

He may be on the special staff or the personal staff of his commander, depending upon the desires of the commander concerned. He is the confidential agent of his commander.

Consequently, in order to maintain the integrity of the inspector general, a commander never should appoint his inspector general to serve on any board, court, or activity which would in any manner whatsoever jeopardize the position of his inspector general.

Fortunate, indeed, is the inspector general who finds himself on the staff of a commander who knows, understands, and believes in the activities of an inspector general, although I hasten to add that those commanders who fail to make appropriate and full use of their inspector general are strictly in the minority.

If the commander on whose staff an inspector general serves can ask himself the following questions and come up with the same answer for all, he is making full use of his inspector general:

What officer on my staff visits every unit in the command?

What officer on my staff sees all funds, all company punishment books, all correspondence files, all mess records and mess halls, all bulletin boards, all supply rooms and records, all subordinate commanders and their staffs, all duty rosters, and all morning reports?

What officer on my staff is my confidential agent, listening to any and all complaints and investigating all activities directed by me?

Finally, which officer shall I, as a commander, choose for my inspector general?

Droit et avant.

Your Army continues to devise new means of making the ground soldier's job an easier one, for as long as man continues to depend upon the land as a source of housing, food, clothing, and happiness the ground soldier's role will be a vital one. His job is highly personal. In the final analysis it is he who must meet the enemy physically in hand-to-hand combat. It is he who must wrest the land from the enemy's control. It is he who must obtain the final decision that brings peace.

Your Army mans the outposts of the free world—ready to defend our homeland against aggression. We do not seek war. Our goal, shared by all men of good will, is a permanent honorable peace. In the last analysis there is no defense comparable to the patriotic determination and high morale of the American people in this hour. There is abroad in our land a feeling of trust and confidence in the justice of our cause that transcends all else. True, it is merely an intangible, but it is the mighty difference that will bring success to our whole effort. With this spiritual quality America cannot fail.

Secretary of the Army Wilber M. Brucker

INDOCHINA
The Last Year of the War
The Navarre Plan

Bernard B. Fall

WHILE a previous article (MILITARY REVIEW, October 1956) dealt with the organization and tactics of the Communists in Indochina, this article will attempt to describe briefly the operations of the French Union Forces during the fateful 1953-54 period which led to the disaster of Dien Bien Phu and the cease-fire at Geneva in July 1954.

In brief, the problem that faced every French field commander in Indochina since the outbreak of hostilities in 1946 was to compel the main battle force of the enemy to make a fight-or-die stand; and to loosen the Communist stranglehold upon the majority of the population. The first of those objectives was strictly military; the second was fraught with political implications, and thus not within the sphere of control of the military commander (except when he, as in the case of Marshal de Lattre de Tassigny and General Paul Ely, simultaneously held the civilian post of French High Commissioner in Indochina).

Until 1953 the French logistical and manpower base was too narrow to permit a full-scale counteroffensive of nearly one-half million men over a terrain *four* times the size of Korea. However, by 1953, thanks to increasing American aid and French reinforcements, the time now was considered ripe to strike this decisive blow. The man chosen to lead the French Union Forces in this final operation of the war was a newcomer to Indochina, Lieutenant General Henri-Eugène Navarre.

When General Navarre took over command of the French Union Forces in the Far East on 28 May 1953, he found a situation that was at best stagnant. Surely, the first Vietnam People's Army (VPA) offensive into northern Laos had been stopped short of Luang Prabang, the royal residence of Laos, but at the price of building up another airhead at the Plaine des Jarres, thus again diverting precious troops from the Red River Delta. Navarre brought with him to Indochina the promise of increased American aid and that of additional fresh French troops: seven infantry battalions, the French reinforced United Nations battalion from Korea (where hostilities had ended in July 1953), an additional artillery group, and two battalions of combat engineers.

Furthermore, the Vietnamese National Army—which already had more than 100,000 men in the field—fighting as an ally of France was to raise within the year a first group of 19 "light" (that is, 600 men) commando battalions for the purpose of fighting the Communists on their own terrain, to be followed by 35 additional commando battalions within the next fiscal year.[1] Several subsectors had been trans-

[1] General Henri Marchand, *L'Indochine en Guerre*, Pouzet & Co., Paris, 1955, p 278

ferred to Vietnamese command in the meantime, in order to create a mobile reserve with the French troops thus withdrawn from duty in the fixed positions in thousands of bunkers of the De Lattre Line.

There had never been an official published program known as the "Navarre Plan." However, according to various public statements made at the time of its inception, the practical meaning and purpose of the plan becomes clear. According to Navarre's own chief of cabinet, Colonel Revol, the Navarre Plan was to endow the French battle corps "with a mobility and an aggressivity which it lacks." According to another authoritative source, Secretary of State John Foster Dulles, the Navarre Plan was designed to break "the organized body of Communist aggression by the end of the 1955 fighting season," leaving the task of mopping up the smaller guerrilla groups to the national armies of Cambodia, Laos, and Vietnam.

Whatever the ultimate effect of the Navarre Plan, it cannot be denied that the French Union Forces showed the same offensive ability which they had displayed under the late Marshal De Lattre. In fact, it can even be said that too much activity was displayed too often at too many different places (see Figure 1), thus leaving troops and leaders but little time to prepare for the large-scale operations envisaged for the latter phase of the Navarre Plan. (The French still operated with *Groupes Mobiles* (units the size of a regimental combat team) as their largest tactical unit, while the VPA operated with Chinese type, 10,000-man divisions.)

On 17 July 1953 two airborne battalions were parachuted 150 miles behind Communist lines at Lang Son, destroying important enemy depots of Red Chinese and Russian matériel. The troops withdrew successfully to the coast where they were awaited by a French naval task force. This was followed on 28 July by Operation *Camargue*—an attempt by the French to liquidate a string of enemy fortified villages along the central Vietnamese coast which, in view of the losses they had caused to passing convoys, had become known as the "Street without Joy." Two airborne battalions, followed by 10 infantry battalions, three amphibious squadrons, two French Navy commando units, and adequate air support, sought for nearly two weeks to corner VPA Infantry Regiment Number 95. When the latter was finally cornered, one of its companies fought to the death while the rest of the regiment quietly "melted" into the countryside.

On 8 August began the successful air evacuation of the 12,000 men uselessly bottled up in the Na-San airhead, thus relieving the sorely overburdened French transport air force of one of its heavier charges and giving the Red River Delta, for the first time in years, an operational reserve for guerrilla mopup operations. The evacuation was completed without enemy interference on 11 August.

Antiguerrilla operations began now on a large scale within the delta. On 16 August began Operation *Tarentaise* in the Bui-Chu area, followed on 28 August by Operation *Claude*—the latter directed against regular VPA Battalion Number 120 which operated on an island outside of the main port of Haiphong—and by Operation *Brochet* (*Pike*) on 22 September. *Pike* was the largest antiguerrilla opera-

Combating the tactics of the Communists in Indochina, the French Union Forces which fought well lost the campaign there because they tried to fight the enemy too often at too many widely separated places

tion ever undertaken within the delta: no less than 17 infantry battalions, six artillery battalions, one combat engineer battalion, and two *Dinassaut* (naval assault boat groups) were engaged in order to wipe out VPA Infantry Regiment Number 42, infiltrated in Hung Yen province, in the center of the delta. After several severe fights, *Pike* came to a halt on 10 October; Regiment 42 had melted into the countryside, its arms hidden in underground caches.

In an effort to accentuate pressure upon the enemy's rear communications lines through methods similar to those of the Communists themselves, several *Groupes Commandos Mixtes Autochtones* (*GCMA*), or Mixed Native Commando Groups made up of French-trained Thai tribesmen and French cadres, began to operate behind enemy lines. They were, however, too weak to influence the outcome of any particular operation but proved useful for long-range reconnaissance. The most significant operation of such a commando group was the parachuting of 40 Meo tribesmen near Lao Kay on 4 October 1953 in an attempt to destroy VPA communications lines at this vital point of entry into Red China. The operation failed, but as late as October 1955 the Communist authorities in North Vietnam complained over their radio about guerrilla tribesmen who refused to surrender.

However, it became clear to the French High Command that the offensives of the Navarre Plan had thus far failed in their two main objectives: destruction of the enemy's organized battle force, and liquidation of the guerrilla threat behind French lines. Under the personal supervision of General Navarre, Operation *Mouette* (*Seagull*) was launched on 14 October into enemy territory south of the delta in direction of the important enemy supply center of Phu Nho Quan. More than six *Groupes Mobiles*, reinforced by tank and amphibious battalions, two French Navy marine units, broke through the Ninh Binh limestone hills in a pincer movement seeking to encircle the VPA's 320th Infantry Division. VPA Regiments 48 and 64 resisted and even counterattacked the vastly superior French forces until all vital supplies and matériel had been removed from Phu Nho Quan.

Contrary to the hopes of the French, Communist General Giap did not let himself be goaded to commit the mass of his elite forces for the sake of saving one division. When Phu Nho Quan had become useless, the VPA forces around it merely melted again into the rice paddies and hills, and the French entered a deserted city. On 7 November they returned to the delta perimeter. The 320th, although severely mauled, was still a fighting unit. The last attempt to force Giap to a decision on a terrain not of his own choosing had failed.

It but remained for General Navarre to seek out the enemy in his own lair, the mountain uplands. Two alternate solutions were open to him: either attack the enemy's main bases in the Thai-Nguyen Tuyen-Quang "redoubt" (with the chance of perhaps capturing a good part of the enemy's central government and supplies), or place his troops astride the traditional invasion routes into Laos. In spite of the entreaties of General René Cogny, the able commander of the Red River Delta, and in all likelihood due to nonmilitary consid-

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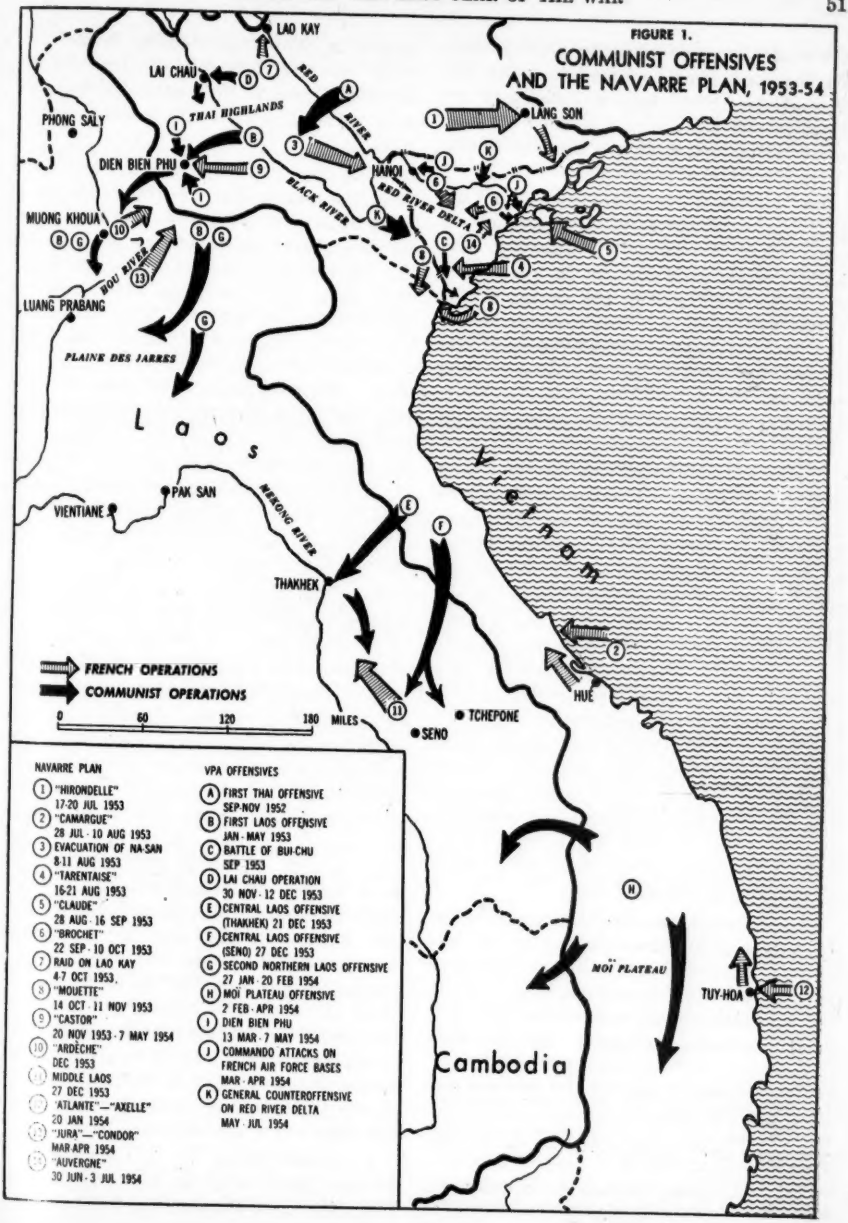
FIGURE 1.

COMMUNIST OFFENSIVES AND THE NAVARRE PLAN, 1953-54



NAVARRE PLAN

1. "HIRONDELLE" 17-20 JUL 1953
2. "CAMARGUE" 28 JUL - 10 AUG 1953
3. EVACUATION OF NA SAN 8-11 AUG 1953
4. "TARENTAISE" 16-21 AUG 1953
5. "CLAUDE" 28 AUG - 16 SEP 1953
6. "BROCHET" 22 SEP - 10 OCT 1953
7. RAID ON LAO KAY 4-7 OCT 1953
8. "MOUETTE" 14 OCT - 11 NOV 1953
9. "CASTOR" 20 NOV 1953 - 7 MAY 1954
10. "ARDÈCHE" DEC 1953
11. MIDDLE LAOS 27 DEC 1953
12. "ATLANTE"—"AXELLE" 20 JAN 1954
13. "JURA"—"CONDOR" MAR-APR 1954
14. "AUVERGNE" 30 JUN - 3 JUL 1954

VPA OFFENSIVES

- (A) FIRST THAI OFFENSIVE SEP-NOV 1952
- (B) FIRST LAOS OFFENSIVE JAN - MAY 1953
- (C) BATTLE OF BUI-CHU SEP 1953
- (D) LAI CHAU OPERATION 30 NOV - 12 DEC 1953
- (E) CENTRAL LAOS OFFENSIVE (THAKHEK) 21 DEC 1953
- (F) CENTRAL LAOS OFFENSIVE (SENO) 27 DEC 1953
- (G) SECOND NORTHERN LAOS OFFENSIVE 27 JAN - 20 FEB 1954
- (H) MOÏ PLATEAU OFFENSIVE 2 FEB - APR 1954
- (I) DIEN BIEN PHU 13 MAR - 7 MAY 1954
- (J) COMMANDO ATTACKS ON FRENCH AIR FORCE BASES MAR - APR 1954
- (K) GENERAL COUNTEROFFENSIVE ON RED RIVER DELTA MAY - JUL 1954

erations,[2] Navarre chose to defend Laos. At the same time he hoped to make this upland stronghold into a sufficiently attractive bait for Giap to commit his elite divisions against it in the hope of taking it.

The bait chosen turned out to be an oblong valley, about 10 miles long and six miles wide, in which the Japanese had built a fairly solid airfield. In pre-French times the little city in the center of the valley had been near the Chinese border and was, therefore, named "Seat of the Border Prefecture," or in Chinese: Dien Bien Phu.

The Trap

Contrary to what has been asserted elsewhere, Dien Bien Phu was never conceived as a "large-scale airborne raid."[3] Its entire mission from the outset was to become a "meat-grinder" for the bulk of the Communist battle force far from the vital Red River Delta, while the French Command would concentrate the remainder of its forces upon mopping up the delta without interference by regular enemy troops. In addition, bomber units stationed in Dien Bien Phu could successfully hamper—if not strangle altogether—the ever-increasing flow of Red Chinese supplies reaching the VPA, and the fortress could become a solid anchor for French raider units operating behind lines, in addition to covering northern Laos.

Operation *Castor*—the code name for the Dien Bien Phu attack—began on 20 November 1953 by the dropping of three parachute battalions over the valley. While the operation itself was a tactical surprise, a Communist mortar unit and several rifle companies training in the drop zone at the moment of the landing inflicted losses to the parachute force before withdrawing for the nearby ring of hills.

Thus the first objective of destroying enemy forces in the immediate vicinity of Dien Bien Phu was never achieved. Considering the number of troops available for the operation (seven paratroop battalions, three North African battalions, one Vietnamese and two tribal Thai battalions, one combat engineer battalion, one truck company, ten light tanks, two 75- and 105-mm artillery groups, and four 155-mm medium howitzers), the size of the valley prevented the occupation of the high grounds surrounding the fortress and their inclusion in the defense perimeter. Therefore, all French preparations had to be made in presumably full view of Communist reconnaissance parties.

However, the major miscalculation of the Dien Bien Phu operation seems to have been made by French intelligence estimates which initially credited the enemy with an artillery composed of 40 to 60 medium howitzers capable of firing 25,000 rounds. However, they apparently gauged Giap in terms of his attack two years earlier on the Na-San airhead and gave the VPA and its Red Chinese backers, now freed from the drain of the Korean conflict, no credit for improvement. As it turned out, Giap's artillery used an estimated 240 to 350 guns, including Soviet heavy rocket launchers, and fired nearly 350,000 rounds, while the fortress (initially provided with 13 days of supplies and less than 10 days of ammunition and fuel) had to use its ammunition sparingly in the face of ever-increasing losses of air-dropped tonnage to the enemy as the defense perimeter shrunk to less than a few hundred yards in diameter.

An investigation by a commission of French generals as to the causes of the Dien Bien Phu disaster was held recently.

[2] The Kingdom of Laos was the first and thus far only Indochinese State to sign an association treaty with France. French political circles felt that northern Laos could not be abandoned to the enemy without also endangering political negotiations with Vietnam and Cambodia

[3] Lieutenant Colonel Norman E. Martin, "Dien Bien Phu and the Future of Airborne Operations," *Military Review*, June 1956, p 20

Its results are still classified but as early as 9 June 1954 General Pierre Koenig, then French Minister of Defense, admitted that:

In fact, from the outset, the enemy artillery dominated ours. . . . It was the same with the [VPA] antiaircraft artillery which immediately proved very effective. Under such conditions the drama began with the beginning of the battle. . . .

However, the drama of Dien Bien Phu was only a relatively more spectacular part of a drama that now played throughout Indochina on a far grander scale:

Ricefields broken by numerous dikes and clusters of bushes in the area near Bien Hoa, located northeast of Saigon, provide excellent terrain for guerrilla ambushes.

General Vo Nguyen Giap's long-promised general counteroffensive.

Communist General Counteroffensive

Ever since his first attack upon northern Laos in the spring of 1953, Giap had retained a corps of about four divisions in the Thai highlands and the northern part of central Vietnam, at almost equal distance between the Red River Delta and Luang Prabang. Throughout the rainy season of 1953 (May to October), Giap successfully avoided engaging his main force while Navarre vainly sought to disrupt the Communist timetable or order of battle. In December Giap was ready. Regiment 101 of the 325th and Regiment 66 of the 304th Infantry Divisions, VPA, drove across the Annamite mountain chain, sweeping ahead of themselves French *Groupe Mobile* (*G. M.*) Number 2 which had been hurriedly sent out of Hué to meet the new threat and whose battered remains now fell back upon the Laotian side of the mountains to the unfortified airfield of Seno.

Once more Navarre had to disperse his already thinly stretched reserves. Along the tried pattern of Na-San, the Plaine des Jarres and Dien Bien Phu, another fortified airhead was hurriedly created around Seno, and a separate Middle Laos Operational Groupment (GOML) activated on Christmas Day 1953: three parachute battalions from the general reserve—including two Vietnamese battalions which gave an excellent account of themselves—parts of *G. M.* Number 2, all of *G. M.* Number 1 and, a few days later, *G. M.* Number 51, plus assorted air and supply components, were concentrated 400 miles

away from the major battlefronts of the Red River Delta and Dien Bien Phu.

On 25 December 1953 the Communists reached the Thai border at Thakhek on the Mekong—the overland lifeline to northern Laos was severed and Indochina cut in two. In the meantime, Regiment 66 of the VPA directly cut across the mountains (see Figure 1) and one by one crushed the smaller French posts strung out along the road from Vietnam to Seno. *G. M.* 51, sent to the rescue, fell into a severe ambush of the jungle variety and its lead battalion was practically annihilated on 24 January 1954, losing all its vehicles.

Two of the paratroop battalions of the Seno airhead, by valiant stand at Hine Siu, saved Seno from a direct attack, but Giap's major southern Laos forces bypassed the now well-fortified position and melted into the jungle only to reappear 20 days later nearly 200 miles farther south, in hitherto quiet northern Cambodia, while another pincer from the Annamese coast suddenly attacked the lightly defended posts of the Moï Plateau.

In northern Laos the situation had also taken a turn for the worse. The entire 316th VPA Division, after having taken the airhead of Lai Chau 55 miles north of Dien Bien Phu, now again marched upon Luang Prabang in four separate columns, liquidating the small garrisons of Muong Nguoi and Muong Khoua, where the year before a small Laotian garrison under a French captain had fought to the death to delay the Communist rush upon Luang Prabang. This time the 2d Laotian Battalion and the 2d Battalion, 3d Regiment, French Foreign Legion, covered the retreat of the small garrisons toward the new defense perimeter around Luang Prabang, being nearly wiped out in the process. On 13 February 1954 Navarre airlifted another five battalions, including a parachute battalion, into Luang Prabang, thus further dispersing his forces and adding another crushing burden to the already heavily taxed air infrastructure. Five additional battalions were diverted to Muong Sai, covering the northern approaches to the city.

Giap thus had fully succeeded in making Navarre progressively throw his painfully gathered mobile reserve into the four corners of Indochina in pursuit of a "single-battle decision" that was definitely not part of the pattern of the war fought in Indochina. Yet, in his New Year's message to his troops, Navarre stated:

Having lost all hopes of winning a decisive battle in the Red River Delta, the Vietminh disperses its forces. . . . However, in that type of warfare, we have the advantage of being able to concentrate our forces rapidly at any essential point. . . . A campaign begun under such conditions can but turn in our favor.

What happened next cannot be readily explained in terms of military strategy and must await careful examination by future students of military history: with Dien Bien Phu threatened, central Laos invaded, northern Laos under attack, and the Red River Delta more infiltrated than ever, Navarre, on 20 January 1954, launched a combined land and amphibian attack against Tuy-Hoa, a stretch of Communist-held coast in southern Central Vietnam that had been in Communist hands since 1945 and was of no military usefulness to anyone. Operation *Atlante*—as it was called—diverted another 15,000 troops and, after initial successes in the landing areas, soon bogged down in the jungle-covered hills of the roadless hinterland. The time now was ripe for Giap's last round.

Within a week after the beginning of Operation *Atlante*, Giap called off the attack of the 316th Division upon northern Laos and concentrated the bulk of the 304th, 308th, and 312th Infantry Divisions, and all of the 351st "Heavy" Divi-

sion around Dien Bien Phu. Giap's attack began at 1730 on 13 March 1954 by a heavy artillery barrage upon the two major outlying hill positions covering the central redoubt which were overrun 48 hours later after several "human sea" attacks.

According to a conservative French weekly, *Paris-Match*, of 12 May 1956, the report of the French military investigation commission states that General de Castries had committed "a grave error" in not attempting to hold the two hill positions at all costs.

Attempts were made to constitute a link-up force in northern Laos in order to save the doomed fortress. Under the code name of *Jura* and *Condor*, about 5,000 men were assembled under Colonels De Crèvecoeur and Goddard, but the attempt was finally abandoned for the good reason that there were simply not enough reserves left to give the column the necessary strength for at least an even chance of survival against the 40,000 Communist troops concentrated around Dien Bien Phu.

Furthermore, the logistical problem of supplying by air a mobile 12,000-man force over several weeks in addition to supplying Dien Bien Phu with the daily 200 tons it needed was simply insuperable under the then prevailing conditions, the more so as the monsoon weather considerably curtailed air activities throughout the area.

The End

The ensuing disaster, although it deprived the French only of about four percent of their total military manpower in Indochina, proved a crippling blow. Navarre's order of the day of 9 May 1954, that Dien Bien Phu's "sacrifice had not been in vain, for . . . it saved Upper Laos from invasion and preserved the [Red River] Delta," is not too convincing, for the Red River Delta, already thoroughly undermined by Communist guerrillas and infiltrated VPA regulars, already had begun to crack even before the arrival of the victorious VPA divisions from Dien Bien Phu. General Paul Ely, the new French commander who had replaced Navarre, now had to face in the delta area nearly 100,000 Communist regulars and an equal number of guerrillas with less than 80,000 troops of his own. And among the French Union Forces certain Vietnamese units, seeing the signs of the tide, began to disintegrate.

On 30 June 1954 began Operation *Auvergne*, the last of the Indochina war: two armored and two motorized *G. M.* covered the retreat of all French forces in the southern part of the delta toward a shortened line south of the Hanoi-Haiphong road, where the maintenance of communications had become a daily battle between French armored forces and hordes of Communist infantry now armed with modern recoilless weapons.

Hostilities ended on 21 July 1954 after a cease-fire had been negotiated at Geneva which gave the Democratic Republic of Vietnam control of all of Vietnam north of the 17th parallel (see Figure 2). The eight years of war had cost the French about 10 billion dollars (in addition to 1.1 billion dollars United States aid delivered before the cease-fire), and 106,000 dead or missing, including three generals and 2,000 other officers.

Conclusions

1. As General Gavin once said: "Mobility which does not result in concentration for battle is of no use whatever." This is, perhaps, one of the major lessons to be drawn from French tactics in Indochina during the last year of the war. Contrary to the previous years, when a "wall psychology" prevailed, no one can accuse Navarre of immobility. However, the judiciousness of his use of mobility is open to serious question.

2. As a result, although on the whole

the French Union Forces were superior in numbers to the enemy, they were numerically inferior to the enemy at *any* given point of attack. One must add, in all fairness, that the VPA could afford to use hundreds of thousands of slave laborers for logistical and communications support where the French had to use field troops.

3. The Indochina war had confirmed once more—the Korean conflict being, by and large, another example—the *limited usefulness of air superiority in wars involving underdeveloped areas.* General L. M. Chassin, the former Commanding General of the French Far Eastern Air Force, gave the problem much thought in his recent book, *Aviation Indochine:*

The Communists are well placed to unleash small mass wars in Asia as well as in Africa. They would regain once more all their opportunities for victory if we do not take effective countermeasures.

Chassin asserts that such wars—and Communist operations in Indochina amply bear him out on this—cannot be won by an atomic arsenal. The West at present, by attempting to rely more and more upon unconventional weapons, simply risks finding itself in a position where it will be technologically incapable of effectively dealing with an enemy whose hordes of ground troops advance single file along jungle paths, supplied by swarms of porters from depots and arms factories installed in mountain caves.

4. The importance of political and social action upon the civilian population, both at home and in the combat area, cannot be stressed enough. At home—and here, the French with regard to Indochina failed to a far greater extent than the Americans with regard to Korea—the objective of such a "limited war" must be made clear in order to obtain the moral and material support necessary to provide the fighting army with all that it needs in terms of manpower and equipment. In the combat area the Western force will always be the "stranger" (sometimes welcome, sometimes not) while the adversary will be on his own home ground. A thoroughgoing psychological warfare program coupled with effective improvements (good local government, public health, and agricultural reform programs) must provide the local population with a reason to commit itself effectively to the Western side without feeling that it betrays its own national interests. In Vietnam many of the anti-Communist Nationalists felt that a French victory would merely mean a continuation of French colonial influence, while a Communist victory, no matter at what cost to their personal liberties, would bring some type of national "independence."

SCIENTIFIC MANPOWER AND NATIONAL STRATEGY

Doctor Harry H. Ransom, Research Associate,
Defense Studies Program, Harvard University

GENERAL Maxwell D. Taylor, Army Chief of Staff, recently testified to a Senate committee that since 1950 the Soviet Communists have equipped their army "with a complete family of modern weapons and equipment and continue to maintain it in an excellent state of combat readiness."

Soviet achievements in aircraft production and the development of submarines have been even more widely heralded. And their progress in the technology of land, sea, and air weapons has surprised us on more than one occasion in recent years. Why is this?

It has long been sound intelligence doctrine, as Major General Arthur G. Trudeau reminds us in the March 1956 issue of MILITARY REVIEW, *that economic potential is the best single measure of a nation's strategic capabilities.*

Need Technical Manpower

Yet it is clear today that *one* major aspect in the measurement of economic potential, until recently at least, has been somewhat neglected. This is scientific and engineering manpower.

Although "labor force" has long been considered a basic determinant of economic potential, its analysis has often been faulty. Discussions of economic potential have traditionally given primary emphasis to such factors as steel, petroleum, coal, aluminum, and electric power production. Unquestionably these are basic determinants of economic, and thus strategic, potential. *Yet too often such analyses have not taken into account the long-range strategic implications of the rapidly increasing numbers of scientists, engineers, and other technicians in the Soviet Union, and the growing shortage of the same in the United States.*

National strategy for the future, therefore, must be based on plans which are more sensitive to the implications of scientific and technological skills as important factors in the measurement of relative United States—USSR military potential.

Mass Education in USSR

The Soviet Army's "complete family of modern weapons"—referred to in General Taylor's testimony—is an outgrowth not simply of a vast potential of natural and manpower resources, but of a 35-year Soviet program of mass education, with heavy emphasis on science and engineering. Meanwhile, the United States has been somewhat lagging, in quantity if not in quality, in the production of trained sci-

Russia's plans for mass education pose a threat to our security comparable to the Soviet hydrogen bomb. Scientific manpower is an element demanding attention of strategic planners and national policy makers

entific manpower. Our strategic estimates, as well as policy planning, must face these facts.

United States Armed Forces today are engaged in a technological race with the Soviets. The outcome may affect national survival. America's defense policy makers —both civilian and military—at last are showing increasing awareness that this contest may be won or lost in the field of research and development, and ultimately in the Nation's classrooms.

This awareness is evidenced by a considerable amount of publicly expressed alarm, not only about Soviet weapons systems achievements, but also over the long-range implications of an impending United States shortage of high-quality scientific and engineering manpower.

Any projected strategic plan to contain Soviet expansionism or to deter aggressive war by the Communists obviously must be based on a careful calculation of Soviet military potential. And plans to win a war we cannot deter must be the result of the most precise estimates possible of national strategic capabilities.

Need an Action Policy

Not only must we pay special attention to Soviet scientific potential, but also we must recognize that an action policy for national survival must include the building of an educational framework which will assure the required amount of skilled manpower. The increasing shortage of this essential element of national strength now must be given a very high priority as the Nation begins to implement its strategic plan for the "long haul."

The many immediate specific scientific problems involved in the development of complex weapons today tend to obscure the long-range consequences of our increasing skilled manpower disadvantage vis-à-vis the Soviet Union. Current problems with strategic implications include: how to put successfully a manmade satellite in an encircling orbit around the earth; how to develop missiles with intercontinental range and accuracy; how to build atomic reactors to power ships and planes, or economically to heat, air-condition, and light future cities; and how to solve the problem of the Nation's dwindling natural resources.

Increasing Requirement

Our success in these and other projects will constitute an important variable in long-range strategic calculations. The strategic doctrines, composition, size, and missions of our Army, Navy, and Air Force of the future also will be profoundly affected by our achievements in these projects and by other unpredictable technological "breakthroughs." Whatever develops, it can be predicted with confidence that the need for well-trained scientists and engineers, both in and outside the military services, will increase constantly.

This resource will become increasingly important as a measure of our own military capability, as well as that of the potential enemy. But the alarming fact is that we are not ensuring the supply of this vital human resource in the future.

And the published facts of the growing scientific and engineering capability of the Soviet Union are equally disturbing. Some encouragement may be found, however, in the increasing, if belated, attention now given this problem by United States policy makers.

Doctor Harry H. Ransom received his Bachelor of Arts degree from Vanderbilt University in 1943 and attended Princeton University where he was given his Master of Arts in 1949 and his Ph.D. in 1954. He served as an instructor in Political Science at Vassar College from 1948 to 1952. During 1953-54 he was American Political Science Association "Congressional Fellow," and later was assigned as Assistant Professor of Political Science at Michigan State University. He is now Research Associate of the Defense Studies Program at Harvard University.

Some Disturbing Facts

Here are a few of the more significant cold facts, made public in recent months by Government officials:

Universities and technical institutions in Soviet Russia are graduating engineers in numbers some two and a half times greater than are similar institutions in the United States.

The United States is now training only one-half of her required number of engineers and scientists.

A recent report of the Congressional Joint Atomic Committee (March 1956) reveals that the combined total of engineers and scientists of the United States and 15 Western European nations is about 1,150,000. The Soviet Union total is 890,000 scientists and engineers, not including the satellites and Red China. The Soviet total exceeds that of the United States, and is more than three-fourths the number available in the free nations of Europe combined with the United States.

Most experts seem to feel that Russian scientists and engineers in most fields cannot be considered inferior to our own.

In the decade 1950-60 the Soviet Union is expected to produce 1,200,000 trained engineers and scientists compared to our 900,000.

Even the combined advantage in this regard which the United States and countries of Western Europe have held is being seriously threatened by the Soviet Union.

Half of our high schools teach no chemistry or physics. And much of the mathematics and science is being taught by teachers untrained in these fields.

The number of qualified science teachers in the United States high schools has fallen off 53 percent in the past five years, while high school students have increased by 16 percent.

In 1890, two generations ago, one in every five high school students in the United States studied physics. Today, the figure is about one in every 22.

In the category of engineers alone, the Soviets have multiplied the numbers tenfold since 1930, when records show they had 41,000 engineers.

The chart on page 60 gives a graphic indication of how United States production of scientists and engineers compares with Soviet Russia. The most disturbing aspect of this picture, of course, is the *trend* line. This chart is based on information contained in a study by Benjamin Fine, *New York Times*, 7 November 1954.

The absolute accuracy of figures on Soviet technical manpower cannot, of course, be assured. Not only do Soviet statistics sometime have a questionable validity, but there is also the problem of measuring quality. One might normally discount the kind of chest-thumping evident at the Soviet 20th Party Congress in Moscow (February 1956) over their claimed "superiority" in scientific personnel. Premier Nikolai Bulganin referred to technical experts as the Soviet Union's "gold reserve." The current Five-Year Plan calls for four million new specialists by 1960. This would exceed the Soviet combined output of the two previous plans.

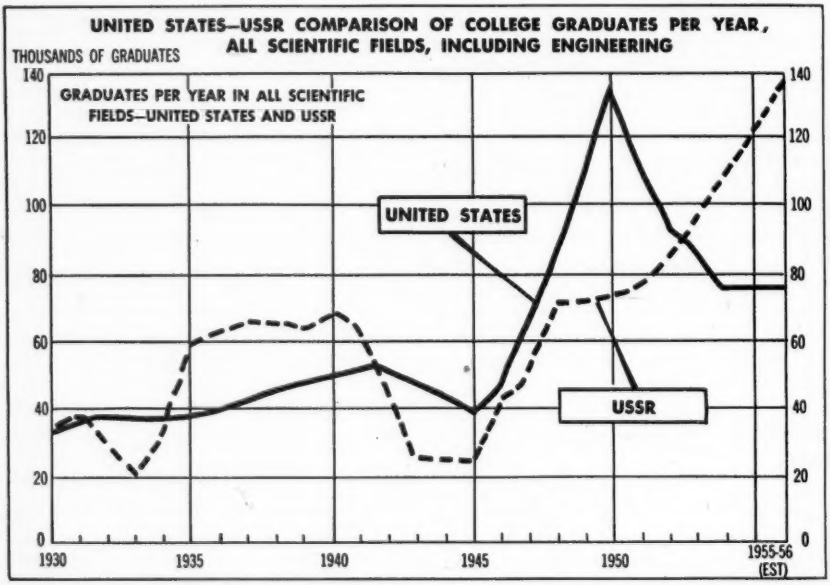
Yet obviously, we do not have to look to Communist propaganda to discover cause for concern. The words of our own Government officials—both civilian and military—and the unclassified facts, such as those above, are alarming enough.

Catfish and the Herring

The British historian Arnold J. Toynbee tells the story, in the context of discussions of the free world-Soviet struggle, of the catfish and the herring. It is the tale of the fisherman who continually returned to port with a catch of herring far fresher than that of his colleagues. Thus his fish brought a higher price. Eventually, the other fishermen learned the secret. The cagey fisherman always dropped a live and

hungry catfish into the tank containing his homebound load of herring. The herring were thus kept active on the voyage to market by attempting to avoid the jaws of the catfish. A few herring were lost en route, but most of them arrived in port alive, fresh, and highly marketable.

The Soviet "catfish" has brought critical self-examination to the West in many fields. Not the least of these in long-range importance, is the need for more trained scientific and engineering personnel than



are now being produced or projected for the future. This has become a crucial national security problem.

Recently, such officials as Secretary of State John Foster Dulles and Atomic Energy Commission Chairman Lewis L. Strauss have been explaining that the long-range security of the United States, and perhaps even the outcome of the cold war, may be acutely affected by a continuing shortage of scientists, engineers, and other technicians.

Exportable Technicians

The armament race implications of this shortage are obvious, but there is an equally important factor less recognized —that is the prospect as expressed by Secretary Dulles and others that the Soviet Union's ability may surpass ours to raise and disperse a force of technical assistants all over Asia and Africa.

Looking ahead 10 years, Secretary Dulles has voiced concern, not that the Soviets will have a true, exportable surplus of capital or goods, but an exportable surplus of technicians. And note, also, that these will not be just qualified scientists and engineers, but the same individuals will be well-trained in the art of political subversion.

The United States, already running short of scientists and engineers, under present trends may not be able to compete effectively with Soviet offers of this kind of technical aid to these so-called "uncommitted areas." The solution to this grave

national security problem demands attention in the highest councils of government.

Those concerned with the implications of scientific and engineering manpower to national strategy will do well to consult two important and easily available recent publications relating to this problem. These are, the report of Congressman Melvin Price's Subcommittee on Research and Development, Congressional Joint Committee on Atomic Energy, *Engineering and Scientific Manpower in the United States, Western Europe, and Soviet Russia*, (March 1956); and Dr. Nicholas DeWitt's[1] *Soviet Professional Manpower: Its Education, Training, and Supply* (National Science Foundation, Washington, 1955).

Even in the unlikely event that "peace breaks out" as a result of feasible East-West disarmament agreements, it should be added that the need for more scientists and engineers would then possibly be greater even than in the present partial war economy.

"Stockpiling" a Vital Resource

The Soviet "catfish" is incentive enough, nonetheless, to justify a program of "stockpiling" scientists and engineers with at least the same degree of national urgency, and with the same generosity of funds, brought to bear in recent years on "stockpiling" critical war materials. The precious human resources required to fill future national security needs cannot, of course, be ersatz or jerry-built.

The future security of the nations of the free world will depend, to a certain extent, upon their educational equipment for engineering and scientific training. This, in turn, depends upon the number and quality of educational institutions, their teaching staffs, curriculum, and student enrollment, and their financial support. These are the vital "secret weapons" for which those responsible for national strategy must develop an urgent action policy.

[1] Russian Research Center, Harvard University

Toward a Solution

An action program, although urgently needed, must be based on the most careful examination and diagnosis of the causes of the present and impending shortages of skilled manpower. This can be produced only after adoption of carefully prepared plans for readjustment of our total educational system. Such an alteration must come only after a collection and full analysis of all relevant information.

Great strides in this direction already have been taken. President Eisenhower early in April 1956 appointed a National Committee for the Development of Scientists and Engineers to survey the problem, collect relevant information, and come forth with recommendations for action. The report of this committee is likely to be a valuable document to students of economic and strategic potential.

Congressional hearings also were under way in the spring of 1956 on this problem by the Subcommittee on Research and Development of the Congressional Joint Committee on Atomic Energy. Thus it will not be long before a mass of information will be at hand for a systematic evaluation.

80 Percent Wastage

Information is already available indicating one important area where weakness exists. It is known that in the United States only half of the high school graduates who are potential science and engineering students enter college. And less than half of those who embark on science and engineering studies actually complete their work for a college degree in these fields.

There is obviously a high degree of loss then in high school, between high school and college, and in college. This amounts, in fact, to an 80 percent wastage of potential engineering and science talent. *For, of every* ten *high school students with theoretical capacity for potential careers*

in science and engineering, only two *actually earn the college degree.*

A major factor in this attrition is an economic one. College education is becoming increasingly expensive. Although the availability of scholarship money has increased, the education "buying power" of scholarships has decreased. It is clear that this aspect of the problem can be solved only with increased financial aid from private corporations, the educational foundations, individual donors, and the Federal and State Governments. Surely, the Federal Government's role will have to be a major one in the provision of scholarships, teacher training, and physical plant.

Roots of Problem Go Deep

Attention must not be directed, however, at the college-level alone, for the problem also has roots in the secondary, and even elementary, school systems.

There is a long and disturbing history of decreasing interest at the high school level in subjects basic to college study of engineering and science, such as mathematics, chemistry, and physics. What seems to be a decreasing interest, however, may only be the result of two major factors: a shortage of competent teachers and an overemphasis, in planning the curriculum, on "generalized" education.

For many complex reasons the number of college-trained scientists and engineers also is steadily declining. Graduates in engineering and science who received degrees with the class of 1950 comprised nearly 25 percent of the entire class. In 1954 these represented about 18 percent. According to predictions, those of the class of 1960 will comprise a bare 15 percent of the total number of college graduates.

Repair Educational System

It is abundantly clear that the total fabric of our educational system needs repair. It is somewhat surprising that in an age of technology this Nation, whose technology surpasses all, should find itself facing serious shortages in such a vital resource as skilled manpower. This argument, parenthetically, should not be taken as one for deemphasizing liberal arts education, particulary the social sciences. To the contrary, it should be noted that the increasing complexity of our technological society demands extra attention by social scientists. This developing "cold war of the classroom" obviously cannot be won without effective action on the basic ingredients of victory: students, teachers, the curriculum, adequate finance, and educational facilities.

It is all too clear that our chief competitor, Soviet Russia, has long since faced this problem with a dogged determination not to be caught short in these vital resources. Russian technological achievements are an indirect result of an intensive kindergarten-to-graduate-school program over the past several decades to assure an adequate supply of scientists and technicians. If they surpass us in this human resource, they have gained a crucial long-range advantage in a primary element of industrial and military strength.

We may take some comfort in the faith that our spirit of academic freedom, which does not exist in Russia, is a built-in guarantee of superior quality. But this offers no excuse for complacency. *Russia's classrooms, laboratories, and ambitious and currently effective plans for mass education pose a threat to our security comparable to the Soviet hydrogen bomb.* There is more than a little connection between Russia's "complete family of modern weapons" in the Soviet Army and the scientific manpower resources which they have created.

Scientific manpower is an element in the strategic potential of the United States and USSR which demands the attention of our strategic planners and national policy makers.

MILITARY NOTES AROUND THE WORLD

UNITED STATES

Fin Stabilizers

Fin stabilizers which hold a ship steady and level in rough water are being tested on a destroyer and a missile ship. If successful, the stabilizing device will also be used on hospital ships and aircraft carriers. The device is said to make a ship ride the roughest water with extreme steadiness.—News release.

Air Force Project FICON

In the Air Force's fighter conveyer (FICON) project, fighter planes are housed in the bomb bay of larger aircraft

GRB-36 **retrieving** *RF-84F Thunderjet*

and can be launched and retrieved without returning to earth. Currently in use on this project are modified *GRB-36's*, acting as carrier planes, and *Thunderjet* fighters, redesignated *RF-84F*. The system is said to permit replacement of pilots and the replenishment of ammunition in flight. —News release.

Nuclear Defense System

A nuclear defense system for airbases, major military headquarters, and key industrial plants detects an atom or hydrogen bomb explosion, and trips relays that sound warning horns, close blast doors, turn off gas lines, start radiologically filtered ventilation systems, and trigger other defensive measures. The system includes gamma ray, thermal, blast pressure, and poison gas detectors. It is said to be immune to high-explosive blasts or thunderstorm "false alarms." Developed by the Signal Corps Engineering Laboratories, the system has been installed in one major army headquarters and is planned for others.—News release.

Submarine Trainer

An elaborate electronic system called the Universal Submarine Simulator is in use by the Navy in training submarine personnel. The device consists of a hydraulically operated cradle, inside which is a replica of the control room of a submarine. At the direction of the instructor it can simulate firing torpedos and develop leaks, engine failure, or other emergencies. By adjustment of its computer system, the simulator can duplicate the characteristics of all types of submarines now in use.—News release.

Satellite Agreement

The United States and the Soviet Union have made an agreement to cooperate in their plans for sending up artificial earth satellites during the International Geophysical Year. Part of the agreement concerns the standardization of all instruments used in tracking the satellites. The transmitter, especially developed for use in the United States satellite program, will weigh 13 ounces, is quartz crystal-controlled, fully transistorized, and operates on a fixed frequency of 108 megacycles.—News release.

Air-to-Air Missile

Following exhaustive tests the Air Force has adopted the Navy's *Sidewinder* air-to-air guided missile. The *Sidewinder* is an inexpensive, five-inch rocket guided by an infrared control system which homes on the hot engine of the target aircraft. Reportedly costing less than $1,000, the new missile is far cheaper than the comparatively expensive *Falcon* (MILITARY REVIEW, Sep 1956, p 68) now in use by some Air Force combat aircraft.—News release.

Bomber Developments

The *B-58 Hustler* is the United States first truly supersonic long-range bomber. Seen in public recently for the first time, the delta-wing *Hustler* is roughly comparable in size to the *B-47* medium bomber. The *B-58* is characterized by a pointed nose and very slender fuselage, and is powered by four *J-79* jet engines of an estimated 12,000- to 15,000-pounds thrust each. The speed of the *Hustler* has been estimated at between 1,000 and 1,400 miles an hour. Another supersonic bomber, designated the *XB-68*, is said to be under development, and reportedly will fly at speeds of more than twice the speed of sound and at extremely high altitudes. It will be built of stainless steel and is expected to have a range of 2,000 to 3,000 miles.—News release.

Baseball Hand Grenade

A hand grenade about the same shape and size as a baseball has been tested by the Army with reportedly excellent results. Designed to be lethal within 15 feet, the aluminum casing of the grenade is impregnated with over 2,000 tiny steel pellets. The Army has not yet adopted it. —News release.

High-Speed Wind Tunnel

The Air Force Research and Development Command is using a wind tunnel which simulates missile flight at speeds of 11,000 miles an hour and at temperatures of 15,000 degrees Fahrenheit—about 5,000 degrees hotter than the sun. Missile research at even higher speeds and temperatures is planned for the future.—News release.

Fast Carrier Plane

Research and development of a prototype have begun on the Navy's *A3J* which is planned to have a top speed of more than 1,000 miles an hour and be able to slow down sufficiently and land on an aircraft carrier. A contract for 86 million dollars has been awarded for the development of the twin-jet, two-place aircraft which is expected to compare favorably with the Air Force's *B-58*.—News release.

Weapons Development

In a recent display of the latest additions to the Army's arsenal of weapons, four automatic weapons, two rockets, a 175-mm field artillery gun, a 105-mm mortar, and the latest improved version of the *M48* tank were shown for the first time.

The *T161E3* 7.62-mm machinegun is a lightweight, general-purpose weapon which was developed to replace all three of the present United States .30-caliber machineguns. Chambered for the standard NATO cartridge, it can be fired from the shoulder or hip, from a bipod, or from a light tripod mount.

The *M39*, a 20-mm, air-cooled machinegun, and the *T182* 30-mm automatic gun are relatively lightweight, electrically fired, and gas-operated. They have extremely high rates of fire made possible by the five-chamber, revolver type cylinder which moves ammunition through the firing cycle faster than the older reciprocating bolt type mechanism. The *M39* weighs about 170 pounds, and fires a shell which bursts after penetrating the target. According to a report, the *T182* was developed to meet an Air Force requirement.

The fourth machinegun displayed was the rapid-firing *Vulcan* (MILITARY REVIEW, Nov 1956, p 76).

Rockets displayed included the 318-mm

***T45*, 175-mm gun**

Little John XM47, and the antitank *Dart* with vehicular mounting. The five-foot-long *Dart* was designed with the "high probability that a single hit will destroy a heavily armored tank," and is sufficiently maneuverable to be relatively safe from rifle and machinegun fire. It is powered by a rocket motor which utilizes a smokeless propellant.

A 175-mm gun, the *T45*, is said to be superior in many ways to comparable weapons of World War II. Except for the 280-mm atomic cannon, the *T45's* hydraulic-electric power has never been used before on towed carriages. It can fire in a complete circle and can be emplaced without the digging of spade or recoil pits.

The 105-mm *T33E3* mortar is lighter in weight and has a greater accuracy and range than preceding smooth bore weapons. It has a greater traverse without re-

Versatile new machinegun

emplacement, and in the field artillery role will supplement the fires of the light howitzer.

The *M48E1* tank has an improved control system which will permit accurate fire by its 90-mm gun while the tank is moving. Besides its primary weapon the *M48E1*

***Dart* vehicular mount**

mounts two .50-caliber machineguns. Powered by a more powerful engine and equipped with 28-inch tracks, the improved tank is said to have excellent mobility and a maximum speed in excess of 30 miles an hour.—News release.

Association of the US Army

"There will never again be a war involving the major powers without the use or the threat of use of atomic weapons." With these words General Maxwell D. Taylor, Chief of Staff of the United States Army, focused the attention of the 1,500 Army officers who attended the Second Annual Meeting of the Association of the United States Army (AUSA) on present-day realities.

At the meeting at Washington's Sheraton-Park Hotel, 24-27 October, only a few days before the election and during the early days of the Hungarian Revolution, Secretary of the Army Wilber M. Brucker, General Taylor, and their top assistants outlined the Army's tasks for the foreseeable future and established the continuing need for mobile land forces to deter or combat the various forms of aggression. "Atomic weapons in themselves are inconclusive," General Taylor stated. "In the final analysis sizable ground forces must be used if the enemy, his people, and his land are to be brought under control."

The ranking Army generals in the Pentagon and their assistants echoed and reinforced General Taylor's views. The Army's strengths and weaknesses from the viewpoint of personnel, intelligence, operations, logistics, and matériel were openly discussed by the generals and civilian scientists responsible for the Army's mission in national defense.

Civilian industry took an active and sometimes aggressive part in the three-day conference. More than 50 industrial concerns set up displays of matériel.

At the business meeting, General Walter Weible, the outgoing president of the Association, introduced the imposing list of business executives who would assume control of the newly reorganized Association. W. F. Rockwell, Chairman of the Board of Rockwell Manufacturing Company and a colonel in USAR, was designated Chairman of the Council, and John Slezak, Chairman of the Board of Kable Printing Company, was named president. General Matthew B. Ridgway, Chairman of the Board of Mellon Institute of Industrial Research and former Army Chief of Staff, was accorded a spontaneous standing ovation when he was announced as the vice president. Maj Gen L. J. Sverdrup, President of Sverdrup and Parcel, Incorporated, was also named as a vice president. Members of the Council of Trustees of the reorganized Association include General of the Army Omar N. Bradley, General A. M. Gruenther, General Lucius D. Clay, General John E. Hull, General Charles L. Bolte, Lt Gen Milton G. Baker, Maj Gen Harry McK Roper, Brig Gen David Sarnoff, Don Belding, and Robert L. Biggers. Except for General Gruenther, all of the generals are retired from active service and hold senior executive civilian positions. General Gruenther has announced plans to retire from active service after the first of the year. Mr. Belding is Chairman of the Board of Foote, Cone and Belding, and Mr. Biggers is President, Fargo Division, Chrysler Corporation.

Presentation of charters to local chapters of the National Association climaxed the three-day meeting. The first local chapter to be chartered was the Henry Leavenworth Chapter of Fort Leavenworth, Kansas, the site of the Army's Command and General Staff College. Attesting to the spontaneous popularity of the grass-roots movement among individual members of the newly rejuvenated Association, charters were also presented to local chapters recently established at Fort Riley, Kansas, and Fort Leonard Wood, Missouri. Cadet chapter charters were handed out to Virginia Military Institute and Pennsylvania State University.

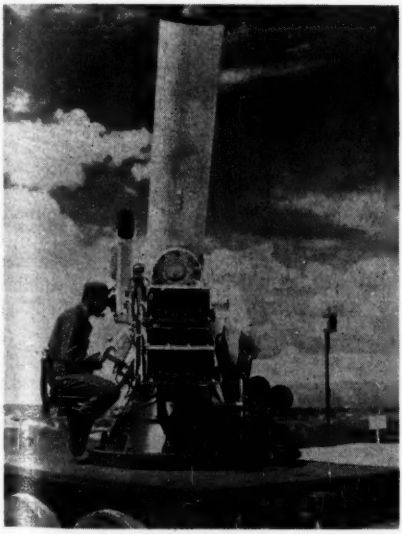
A complete resume of the proceedings of the Second Annual Meeting and the major addresses will be published in the Association's monthly magazine *Army*.—News release.

Three-Stage Rocket Tests

In recent tests a three-stage version of the Army's *Redstone* rocket traveled 3,000 miles. The *Redstone*, which is five feet in diameter and 60 feet long, was fired over the Atlantic test range from Cape Canaveral, Florida. The longest flight of the big rocket previously reported was 300 miles. The *Redstone* is planned as the forerunner of the 1,500-mile *Jupiter* which is being developed for ground use by the Army and for shipboard launching by the Navy.—News release.

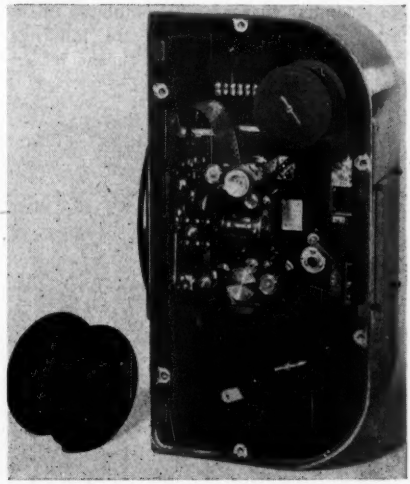
Missile Tracker

A recently developed missile-tracking device which weighs one and one-half tons and utilizes high-speed cameras to record information is capable of tracking fast-moving, aerial objects at a distance of 300



Army's latest missile tracker

miles. Designed around a 400-pound lens system, the tracker will be used in conjunction with radar in performing its mission. The main camera, especially built for this system, uses 70-mm film and records four pictures of the object being tracked per second. A 35-mm camera, keyed to the main camera by a timing signal, records



High-speed 70-mm camera

information as to direction and elevation of the target. Both cameras are capable of being speeded up to 20 frames a second if necessary.—News release.

Navy Research Rocket

The *Iris*, the Navy's latest research rocket, is planned for use in obtaining meteorological data up to an altitude of 200 miles. It is expected to be ready for operation in the latter part of the International Geophysical Year. The new rocket uses a solid fuel propellant and can carry a payload of 100 pounds.—News release.

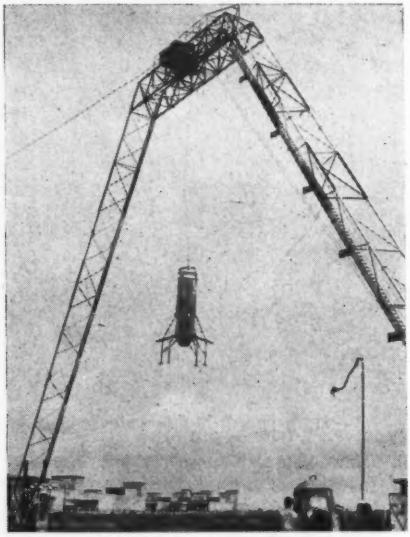
New Survival Gun

A new lightweight Air Force survival gun weighs only two pounds and six ounces, can fire either Hornet or .22 long ammunition, and is equipped with two detachable 14-inch barrels. The barrels, in addition to a compass and fishing gear, can be fitted into the light plastic stock of the gun.—News release.

FRANCE

Turbine-Powered VTOL

The gas turbine-powered, wingless *Flying Atar* has successfully completed initial tests in vertical takeoffs and landings. Powered by a 6,200-pounds thrust jet engine, the *Flying Atar* is supported solely by the jet exhaust; is operated by radio remote control; and remains in a vertical position even while moving laterally. The experimental machine is comprised of an *Atar* jet engine, fuel tanks, and control apparatus. It weighs 5,600 pounds.—News release.



Flying Atar in test rig

Ejector Seat

The *E.120* ejector seat is especially designed to ensure the security of the pilot in escaping from VTOL aircraft. In preliminary tests a quick-opening parachute has been used successfully at extremely low altitudes. With this device the pilot is released from the ejection seat shortly before it reaches the apex of its upward trajectory and, at the same time, the parachute is freed from its housing.—New release.

Delta-Wing Interceptor

The delta-wing *Mirage 01* has successfully passed its first tests and is now equipped with *Sepr* rockets. The light interceptor operates on a combination jet and rocket propulsion.—News release.

POLAND

Military Production

Reports indicate that about 50 percent of the production of Poland's Poznan Stalin Works, the Pafawag factory at Breslau, and the truck factory at Starachowice is military. All three factories were reorganized a year ago with a subsequent increase in production of military type items. These include radio cars, platforms for transportation of tanks and armored cars, amphibious vehicles, and other heavy equipment. A substantial portion of the Polish production is said to have been shipped to the Far East.—News release.

Armed Forces Strength

In line with the Soviet bloc's announced reduction of armed forces (MILITARY REVIEW, Sep 1956, p 71), Poland has released information on plans to reduce the number of soldiers in her defense force by 50,000. Although there are no official figures on the size of Poland's Army, unofficial estimates are that 650,000 men were under arms before last year's announced reduction of 47,000 men. Soviet forces stationed in Poland are reported to have increased from 60,000 to 140,000 in the last three months. Four new Soviet divisions were sent to Poland in midsummer, three armored divisions have been transferred from East Germany and are stationed at Slubice on the Poland-German frontier near the main Berlin-Wroclaw highway and at Nysa on the Poland-Czechoslovakian border. A Soviet air regiment and an armored

division newly arrived from the USSR are stationed at Mielec in southeastern Poland. —News release.

SPAIN

American Bases

All supplies for the American airbases in Spain are being brought in to the logistical center airbase at San Pablo, seven miles from Seville. The 7,000-foot runway and ramp are now in use but the remainder of the base will probably not be completed before 1958. A base for naval aircraft is under construction at Rota, near Cadiz, and Strategic Air Command bomber bases are being built at Moron de la Frontera, 25 miles from Seville, Torrejòn de Ardoz, outside Madrid, and Sanjurjo near Zaragoza.—News release.

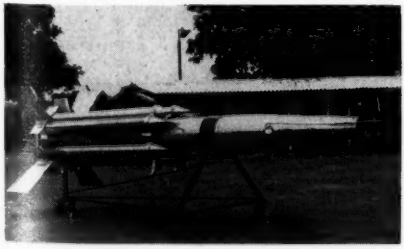
GREAT BRITAIN

Mobile Muffler

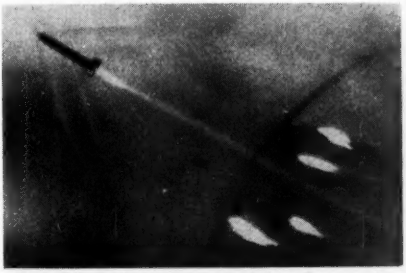
A two-part muffler has been devised to silence the noise of the *Vulcan* bomber's four *Olympus 101* engines. The 56-ton muffler comprises two 54-foot-long steel tubes with a maximum diameter of 11½ feet.—News release.

Ramjet Rockets

Ramjet engines currently undergoing tests are the *Thor* and the *NRJ1*. Since the ramjet operates effectively only at higher speeds, booster rockets are used to start the test vehicle and are jettisoned after it is well above the speed of sound. The *Thor* is considered to be fully tested and ready for service in guided missiles and aircraft. According to a report, it has exceeded expectations, and can develop 90,000-thrust horsepower at Mach 3 at sea level. Both vehicles have reached heights well beyond that at which piloted aircraft are operated. The *NRJ1* has set an altitude record for vehicles of its type. At the end of the test flight the ramjet vehicles are blown up in midair by a self-contained explosive charge.—News release.



***NRJ1* ramjet vehicle**
(By courtesy of 'The Aeroplane')



***Thor* drops boosters at 1,000 miles an hour**
(By courtesy of 'The Aeroplane')

New Equipment

The *Bristol Britannia*, Great Britain's 100-passenger turboprop airliner (MILITARY REVIEW, Aug 1955, p 67, and Mar 1956, p 73), is now equipped with a periscope type drift meter, reverse pitch propeller braking, and a radar storm warning system. The drift meter permits the pilot to check ground direction and speed by matching the movement of a graticule marking in a retractable periscope with the apparent motion of the ground. The reverse pitch propeller braking permits the 42-ton *Britannia* to land on less than a mile of runway, and makes its landing operations independent of icy runway conditions. The radar storm warning system can "see" large cloud formations as much as 170 miles away. It also detects mountains at considerable distance, and can be used for navigation. The system uses a wavelength of a little over an inch and

can distinguish between cloud formations which threaten severe weather and those which pose no particular threat.—News release.

Delta-Wing Bomber

Great Britain's four-jet, delta-wing *Vulcan B.1* is now in production for the Royal Air Force Bomber Command. It is powered by four *Bristol Olympus 101* two-

Delta-wing *Vulcan B.1*

spool turbojets of 11,000-pounds thrust each. The unique airbrakes of the big bomber consist of rectangular panels disposed in pairs above and below the wings. Each panel is carried on two arms and during retraction turns 90 degrees to lie flush within the wing structure. For additional braking during landings, a tail-braking parachute is housed in the right side of the tail cone. The *Vulcan* weighs 130,000 pounds fully loaded, is 97 feet long, and measures 99 feet from wingtip to wingtip. Performance figures have not been released, but it has been estimated that a commercial version, the *Atlantic*, will be able to cruise at over 600 miles an hour at 40,000 feet.—News release.

Underwater Television Camera

An underwater television camera which transmits directly to a receiver above the surface of the water is expected to have wide application in salvage operations and underwater intelligence. The camera, a 12-inch sphere weighing 32 pounds on land and buoyant under water, can operate to a depth of 250 feet. By means of a concurrently developed underwater loudspeaker system, intelligent direction can be given to the diver operating the camera. Two handles fitted to the spherical camera can be replaced with weights and lamps so that the unit can also be used suspended by a cable and operated by remote control. —News release.

Aircraft Engines

An entirely new rocket engine, the *NSC-1 Scorpion*, is undergoing tests in a converted *Canberra* medium bomber. The *Screamer*, another throttleable rocket engine that burns liquid oxygen and kerosene and that can be used as either the main powerplant or to assist takeoffs, has been redesigned to develop 8,000 pounds of thrust. The *Bristol BOL 1.6* has been announced as Great Britain's highest-powered jet engine. The big two-spool turbojet develops 16,000 pounds of thrust. The *Gyron Junior*, a specialized jet engine designed for high-flying supersonic aircraft, has past unofficial flight tests.—News release.

Maritime Reconnaissance Plane

The *MK.3* version of the Avro *Shackleton* is now in quantity production for the Royal Air Force and the South African Air Force. The four 2,450-horsepower *Griffon 67* engines of the big plane drive six-blade, coaxial, counterrotating propellers. Equipped to perform a variety of missions, the specialized land-based air-

***Shackleton* equipped for rescue mission**

craft will be used by the Coastal Command of the RAF. The plane is capable of long-range antisubmarine and reconnaissance patrols, and may also be used for air-sea rescue work by utilizing its motor-driven

lifeboat which is launched by parachute. It is equipped with radar for submarine detection and carries depth charges and bombs for attack on enemy vessels. Its excellent flight characteristics and versatility are said to make an ideal aircraft for use as a convoy escort.—News release.

Aircraft Carrier Refitted

The 22,000-ton aircraft carrier *HMS Albion* has been removed from drydock with extensive refitting virtually completed. The angled-deck *Albion* was completed two years ago, cost 28 million dollars, and carries 45 aircraft. It is equipped with two catapults and is of the *Hermes* class. Plans for assignment of the *Albion* to fleet duty have not been announced.—News release.

WEST GERMANY

Air Force Begins

The new West German Luftwaffe has begun operations with an *L-18*, a *T-6* trainer, and a *T-33* jet trainer furnished by the United States. The planes are marked with a black iron cross on a white background on the wings, and a black, red, and gold rectangle on the tail. Approximately 1,300 planes including 16 *Fairey Gannet* antisubmarine aircraft purchased from Great Britain will be included in the West German tactical air force. Delivery of the *Gannets* is planned for 1958.—News release.

SWEDEN

Armed Forces Reorganization

In a move to streamline the organization of the Swedish armed forces, rifle companies are being reduced from 200 to 150 men. Three companies are included in a battalion, and three of the new light battalions will make up a regiment. New equipment includes French 155-mm guns, Bofors 40-mm and 57-mm antiaircraft weapons, 80-mm recoilless rifles, and more bicycles and helicopters. Armored units will use British *Centurions* and a new Swedish-built light tank. The navy has three new 1,880-ton destroyers with another planned for launching next year. The navy consists mainly of light ships rather than cruisers and battleships, and features destroyers, minelayers, and a 44-knot motor torpedo boat. The air force places its main burden of interception on the *SAAB J-35 Draken* (MILITARY REVIEW, Jul 1956, p 74) and the British *Hawker Hunter*.—News release.

TURKEY

American Jets Received

Fourteen *F-84-F Thunderflash* jet photoreconnaissance planes (MILITARY REVIEW, Sep 1956, p 70) were received in Turkey recently. These are the first of the 50 fast photoreconnaissance versions of the *F-84 Thunderstreak* which are scheduled for the Turkish Air Force.—News release.

USSR

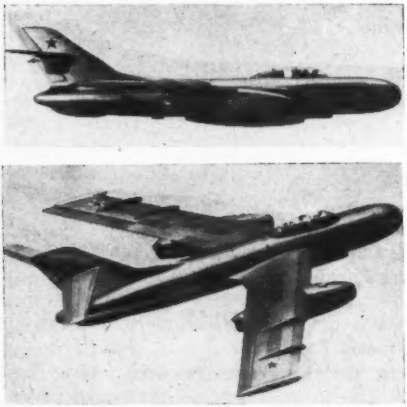
Atomic Progress

A major nuclear research center has been set up at Dubna, about 95 miles northeast of Moscow. The center will be the headquarters for the Joint Nuclear Research Institute of the USSR and her satellites. A 680,000-volt cyclotron is now in operation at the research center, and a 10 million-volt cyclotron is planned. The new cyclotron will be 184 feet in diameter and is claimed to be the biggest in the world. The outfitting of the institute is expected to cost over 125 million dollars. A thousand workers and 300 scientists are currently employed in the center, and 50 more physicists from satellite nations will work and study there during the coming year. Five atomic power stations are now under construction at Voronezh, Leningrad, and in the Ural area. Additionally, Moscow University, the Moscow Physio-Engineering Institute, and the Tomsk Polytechnical Institute in Siberia are reported as being equipped with reactors for

use in the training of nuclear specialists. —News release.

Twin-Jet Fighter Bomber

The Soviet jet plane, *Flashlight*, designed by Yakovlev is equipped to operate as a light attack bomber and as an all-weather fighter. The bomber version has a windowed bombardier nose while the all-weather fighter version features a radome nose section. The swept-wing, two-seat



All-weather fighter, *Flashlight*

Flashlight weighs approximately 18 tons and is powered by two 8,000-pounds thrust axial flow turbojet engines housed in long, slender pods under each wing. Performance data on this aircraft is not available. —News release.

Helicopter Progress

Current Soviet helicopters include the *Omega III*, a 32-passenger craft utilizing two outrigger rotors which are powered by two 2,000-horsepower engines mounted in the fuselage; the one-place *Ka-10* using two coaxial rotors; the *Ml-1 Hare*, a conventional four or five-place machine resembling the *Bristol 171*; the *Ml-4 Hound*, the first rotary-wing "workhorse" of the USSR which has a useful payload of 4,400 pounds; and the *Yak-24* which weighs about 30,000 pounds, has a maximum payload of four tons, and has recently set two world records for helicopters (MILITARY REVIEW Sep 1956, p 71).—News release.

Atomic Torpedoes

Soviet submarines are to be equipped with torpedoes having atomic warheads according to a Communist periodical. Present Soviet submarines are faster and have a greater cruising range than those operating during World War II the report said, and are now able to charge their batteries during submerged cruising.—News release.

Rebuilds Canal

The 150-year old Mariinsk Canal system, otherwise known as the Volga-Baltic waterway, is under reconstruction. Last rebuilt in 1898, the 39 locks in the system will be replaced with nine modern locks; six new reservoirs will be set up to control the water supply; and three large hydroelectric power stations at Vytegra, Belousov, and Cherepovets will be part of the new canal system. Modernization of the system is expected to permit vessels up to 4,000 tons to use the canal. The project is scheduled for completion by 1962.—News release.

EGYPT

Arms Received

Recent deliveries of Czechoslovakian arms to Egypt include 200 jet fighter planes of the *MiG-15* type, and 50 *Il-28* medium bombers.—News release.

COSTA RICA

Oil Discovery

An oil strike, reported to be of "tremendous importance," has been made in the Limón Province of Costa Rica near the northeast Panama-Costa Rican border. The first well in this area is flowing at 1,000 barrels a day. Exploratory drilling will continue in both Costa Rica and Panama.—News release.

FOREIGN MILITARY DIGESTS

The Atomic Weapon's Meaning to Warfare

Translated and digested by the MILITARY REVIEW from an article by Major Tor Vik in the January, February, and March issues of "Norsk Militaert Tidsskrift" (Norway) 1956.

We should think peace, talk peace, and act peace, but if war comes, we should be prepared to fight it, to win it, and to survive it.

—Bernard Baruch

SCARCELY any development has stirred speculations of such far-reaching import as the development of the atom bomb. Science has produced a new instrument, a new technical miracle, which has to be mastered by humanity. We must learn to understand what the instrument can do for us and to us and we must learn to handle and control it. This requires study, instruction, and sober evaluation.

The aim of this article is to throw light on the factors which necessitate the evolution we see today in the political and military fields as a result of the advent of atomic weapons, the significance of these weapons in the prevention of war, and their possible use in the conduct of war.

History

It is now more than 10 years since the first atom bomb was dropped over Hiroshima, Japan. We know, now, that the bomb had an explosive effect of 20,000 tons of TNT explosive (20 kilotons). It is interesting to note that during World War II the largest conventional bombs carried an explosive charge of about two tons of TNT.

The first atomic explosion took place on 16 July 1945 in the United States at Alamogordo, New Mexico. This one was also of 20 kilotons and of the same type as the one which was set off over Hiroshima (U 235).

On 9 August 1945 another bomb was dropped over Japan, this time over Nagasaki. The explosive charge was of 27.5 kilotons. The explosive substance was plutonium (U 239). In 1946 two bombs were detonated on the Bikini Island group in the Pacific Ocean (plutonium U 239). The first was detonated 2,300 feet above the surface of the ocean on 1 July 1946 (Test *Able*). The next, on 25 July 1946, was detonated 16 feet below the surface

of the ocean (Test *Baker*). Both of the bombs were of 20 kilotons.

The Soviets' first uranium bomb exploded on 22 September 1949. In October 1951 instruments indicated that new experiments had occurred. In April 1951 a bomb was detonated on the Eniwetok testing field in the Pacific Ocean. This was of 50 kilotons and consisted of U 235 and U 239. The first British atomic explosion took place on the Monte Bello Islands northwest of Australia in the fall of 1952.

The first hydrogen bomb was detonated on Eniwetok on 1 November 1952. It was of five megatons or corresponding to five million tons of TNT. American investigations revealed that the first Soviet hydrogen bomb was exploded on 8 August 1953. Foreign Minister Molotov confirmed this the next day.

Further tests have lead to the development of atomic artillery projectiles, light tactical bombs to be carried by smaller, faster planes, and atomic warheads for guided missiles and rockets.

We may safely draw the conclusion that in and of itself there is no difference in the possibilities of future use of uranium and hydrogen weapons. The only difference in their employment will be in consideration of the targets they are to be used against.

Thus far only three countries have produced the atomic weapon—the United States, Great Britain, and the Soviet Union. According to the statements of American scientists, also recently confirmed by the longtime foreman of the Atomic Energy Commission of the United States, Bernard Baruch, from the practical viewpoint all nations possessing fissionable material will be able to manufacture the weapons. It is impossible to reserve the knowledge for the manufacturing process to any one country. It is, therefore, only a matter of time until the manufacture of the atomic weapon can be undertaken by all the nations technically and economically capable of doing so.

Effects

The effects of an atomic explosion are of different natures—explosive effect, heat effect, direct radioactive radiation, and the residual radioactivity.

Under like atmospheric conditions the explosive effect is approximately proportioned to the cube root of the explosive force. Theoretically the effect of a 20-kiloton bomb can be multiplied by eight (approximately the cube root of 500) for one to find the explosive effect of a 10-megaton hydrogen bomb.

Theoretically an unprotected soldier, in clear weather, can receive third-degree burns at a distance of up to around 24.8 miles from a 10-megaton hydrogen explosion. In particularly thick weather the thermal range may be reduced to half its value.

The direct radioactive radiation is increased but little by an increase in explosive force. The reason is that the hydrogen bomb's radioactive products come almost entirely from the uranium bomb which detonates it.

The uranium bomb produces radioactive material which is dangerous for a relatively short time to personnel in its vicinity, and then is absorbed by the atmosphere. In a hydrogen bomb explosion there is formed, in addition, a quantity of neutrons which have the property of making surrounding material radioactive. The neutrons are absorbed by the atoms of air and thereby form radioactive carbon.

Radioactive carbon has a long period of life—several thousand years. It will not disappear but will circulate in the atmosphere and if there is enough of it, gradually enter into plants and animals and poison all life over large areas. It takes large amounts to do any considerable damage in this way, but no one today is able to predict its effects. We do not know

whether we have taken full account of the effects of the Hiroshima bomb, for these, possibly, cannot manifest themselves until later generations.

Large numbers of hydrogen explosions —hundreds of them—would possibly poison the air in such a manner that our civilization would be in danger of becoming at least fundamentally different, if not destroyed. To paint a dark picture: it is possible to extinguish all life on the earth by the use of a suitable material such as cobalt 60. This would absorb the neutrons and drop down over the entire earth's surface as radioactive material and little by little destroy all life. The conclusion one may draw is that numerical superiority in the atomic weapon probably will possess no military significance after a certain minimum has been reached. This minimum is limited by the total number that can be detonated before the residual radioactivity becomes devastating for all parties concerned.

Vulnerability

Not all nations are equally vulnerable to atomic explosions. Nations with large centers of population, concentrated centers of communication, large ports, and large industrial installations are more vulnerable than others.

The uranium bomb would have a relatively limited effect, even in the most concentrated population centers, but it can be clearly seen that a hydrogen bomb would completely destroy any city whatsoever. In the British press it is asserted in connection with the "White Book," which came out in February 1955 concerning the British defense program, that nine to 12 hydrogen bombs dropped over the most important centers of Great Britain could cripple the entire nation completely.

Mr. Val Peterson, Administrative Chief of the United States Federal Civil Defense, declared, after having studied the results of the first hydrogen bomb explosion (in November 1952; five megatons), that if the 67 major cities of the United States were exposed to similar explosions, 22 million persons would be dangerously injured, nine million killed, and, practically speaking, the entire Nation's war potential would be eliminated.

Both the United States and Great Britain are, therefore, very vulnerable to the atomic weapon.

Cities in the Far East—for example, Tokyo—give far less protection than cities such as London. We have mentioned that the 20-kiloton bomb which was dropped over Hiroshima took 80,600 human lives and injured 70,000. In London it would not cause nearly so much damage.

Atomic weapons are best adapted to attacks on major concentrations and, if they can attack such targets as large cities, industries, transportation systems, and warehouses, they will be able to cripple a nation's ability to conduct war in a very short time. It is this which forms the basis of the atomic weapon's influence on political and military strategy.

Political Strategy

The conditions for preventing a new outbreak of war seem to be that the Communist countries must be made clearly aware that further aggression will be met with immediate military action and, next, that the conditions be created that will cause the Communists to see no advantage in bringing about a new war—in other words, that will cause them to see that they cannot win. In and of itself this is a clear statement of the problem. But there are many countries which find themselves unable to create these conditions without assistance. These are possible victims for Communist aggression. If such countries had a clear and inequivocally binding security agreement with other countries, it would be possible to create the conditions for preventing war.

Since 1948 we have seen this strategy assume form. It is the atomic weapons and,

especially, the hydrogen bomb, that have created the conditions and, thereby, the basis for Sir John Slessor's optimism relative to the ability of the weapons to prevent a new war.

A complete change has taken place in the international groupment, a change which is scarcely recognized even yet. Lesser nations in times past sought to avoid alliances with other nations in order to remain outside of world conflicts. On the basis of the new strategy those same nations are able to contribute to the prevention of world conflicts which could lay waste our civilized world by concluding alliances binding them to participation in an eventual worldwide atomic war. It is an undeniable and remarkable phenomenon.

Today, we have a fairly strong chain of such collective agreements and it seems as if this development were only in its beginning. Even if it may be said that it is difficult to limit an eventual conflict by any such means, there can be no doubt that a nation will hesitate a long time before attacking a member of the coalition of powers. This development can lead to a relaxation of tension and, as Sir John Slessor expresses it, war will remain only within our brains. One can, however, not get away from the increased risk of war which arises when politically unstable nations are included in such guarantees. This is an enormously daring political practice which can hardly be followed if one lacks the military strength to make the guarantees effective if necessary.

Military and Strategic Background

The political strategy which is shaped on the basis of atomic weapons must be supported by a military strategy which takes full account of two main factors. First, there must be created a military organization which has at its disposal weapons and means for delivering them with sufficient speed and with such effectiveness that the enemy will refrain from engaging in war against any country which is covered by the collective security agreements. Secondly, in case the enemy engages in war, the organization must be able to win the war.

This means that we must be able to destroy the enemy's ability and will to fight regardless of what nation within the bounds of the security system is attacked and, at the same time, be able to protect ourselves and our resources.

A nation that is faced with an enemy who possesses enough atomic weapons to paralyze its resources in the course of a very short time, obviously must have its military organization established and in the highest state of readiness at all times. War is won or lost in time of peace. If the peacetime organization is not such that it can be effective instantly, it is not then strong enough to prevent a war or to win it.

It is a recognized fact that a new weapon will be used whenever either side believes it will be advantageous. Thus far this has seldom failed to be the case. The most dangerous poison gases and biological combat means were not used in World War II because neither party saw advantage in using them. One would be unusually naive to believe that moral grounds have had much to do with the situation. The use of atomic weapons must also be considered on the same basis.

There are four alternatives:

1. A conflict where atomic weapons are not used.

2. A conflict where conventional weapons are used initially and which develops to a point where atomic weapons are used later.

3. A conflict where atomic weapons are used against tactical objectives and not against strategic objectives.

4. A conflict in which instant and all-out use is made of atomic weapons against both tactical and strategic objectives.

From an economic point of view it is an interesting fact that the last alternative is the most advantageous for a defender. One must be ready in any case to adopt this alternative. It is only this alternative that can create the conditions that will prevent a possible attacker from engaging in war. Generally speaking, it may be accepted that it will not be possible to achieve any decision with conventional weapons in a new war between the enormous coalitions of powers which are facing one another except after a very long period of fighting.

Atomic Strategy

Sooner or later it must be anticipated that the losing side will use its atomic weapons. The tactical and strategic employment of military forces using conventional weapons is so fundamentally different from that in the case of atomic weapons, that the losing side in conventional warfare will be able to change the situation to its advantage in a moment by means of the sudden employment of atomic weapons.

Military strategy must rely fully on the all-out employment of atomic weapons from the very outset in a new war. Instead of seeking to adapt atomic weapons to the conventional weapons and tactical methods, we must reorganize ourselves completely in accordance with the influence exerted by the atomic weapons. There is no doubt that we are now in a transitional period in which we shall meet with difficulties stemming from political and military conservatism. One also must not fail to take account of the need for conventional forces, for in order to be able to meet the requirements of limited conflicts, we must maintain forces which are capable of employing conventional weapons. It is, therefore, necessary to find a balance between the primary need and these limited warfare needs. Our existence is dependent on our ability to establish a military organization which is suitable and effective with respect to our primary political needs and which does not exceed the limits of the economic framework we are able to maintain.

Military Strategy

The main problem of military strategy will be to create the conditions to prevent the possible attacker from being successful in paralyzing the defender's war potential by the employment of surprise. By the use of the atomic weapon against one another, chaos cannot but occur over large areas. It will take time to correct the damages. The next period will assume the form of a contest in which both sides will seek to make use of any advantages they may possess in order to force a final decision.

It is quite clear, however, that the entire situation will depend on the very first introductory phase. If a nation cannot withstand the first attack, retaining its war potential, it will not have the ability to wrest a decision from the enemy. This situation gives a clear priority for military strategy. It is the first period which must be won. Possibly there will not even be military operations in the usual sense at a later period, if the first period has absolutely given the one power the upper hand.

It is also easy to conclude that a relatively small number of atomic weapons, especially hydrogen bombs, directed against vital portions of industry, population centers, communication centers, warehouses, and ports will very quickly have a paralyzing effect on a nation's war potential.

When considered from the politico-strategic point of view, it will be impossible to obtain any definitive decision in a war in a single theater. One can only obtain a temporary and partial decision there. The entire coalition of powers must be considered together.

Principal Means

The development of the airplane has been such that any target on the globe can now be reached by airplanes carrying the atomic weapon. Ground or naval forces would not be able to reach the vital targets to the same degree or with the same speed; neither will they have any great amount of influence on the conduct of operations during the first and decisive phase. The air will be the most important element in the delivery of atomic weapons against the vital portions of the enemy's war potential.

But if the goal one is aiming for is to be attained, one must deliver his atomic weapon without being exposed to like or greater damage. It is of little use, for example, for the USSR to pulverize New York, London, and other vital points if United States bomber forces are intact and capable of delivering similar or even greater destruction in the Soviet Union. It is the destruction of the enemy's ability to deliver atomic weapons by air that will be the principal mission of the aerial warfare in the introductory phase, and this must be accomplished on a global basis, not locally or partially, but totally on the basis of the entire coalition of powers.

This means that the first objective for both parties must be to destroy the other's ability to deliver his atomic weapons, to win control of the air, and, at the same time, deliver his own atomic weapons against the enemy's remaining vital points.

Aerial Warfare

Of all the experiences of World War II, surely the most important was an understanding of the necessity for control of the air for every military operation. Sir Arthur Tedder, Marshal of the Royal Air Force, in his book, *Air Power in War*, has given a very clear and convincing presentation of this. It took three and a half years before the Allies achieved decisive control of the air in Europe and not until a half year later did they achieve it in the Pacific. Since the airplane has achieved greater flying range and, with atomic weapons, has greater destructive effect, it is clear that control of the air must be won instantly.

Another lesson we learned during World War II was the importance of secure bases for one's own aviation. Without secure bases one cannot win control of the air and, therefore, cannot obtain operational freedom for air offensive nor for operations on land and sea.

From the last war we also learned that control of the air could not be won with defensive operations. It was, in the main, bomber aviation which won the control of the air, but fighter aviation and antiaircraft artillery contributed to an important extent in securing one's own bases. In those places where an effective air defense system was organized they managed to shoot down from five to 10 percent of the attacking planes. This was a large assessment which, together with the offensive of bomber aviation, regularly gave results. Such results are of little effect when dealing with atomic weapons. A single plane is able, today, to drop a bomb (Eniwetok, 1 March 1954) of three times greater explosive effect than the total bomb load dropped by American and British bomber aviation over Germany during all of World War II.

According to calculations made in the United States and Great Britain, it will not be possible, with the now known air defense systems, to prevent more than between 20 and 30 percent of the attacking planes from reaching their objectives. Even this is very difficult and would call for enormous expenditures if one were to protect all vital areas. This should give a clear indication that control of the air must be won in offensive activity to a much greater degree than during World War II.

Security of the Bases

Air attacks on airfields with conventional weapons resulted, in the extreme cases, in the loss of 30 to 40 percent of the planes which were on the ground, but in relatively little damage to runways, shops, and other installations. A uranium bomb of 20 kilotons could destroy 90 percent of the planes in an airfield of the type NATO uses today. The damage to the runway and installations would be considerable in case the bomb detonated near or on the ground. It must also be supposed that the airfield would be unusable for a while because of radioactivity. A hydrogen bomb of five megatons would be able to destroy an airfield completely.

There appear, in principle, two methods of securing bases. Either one must have so many bases that the enemy will not be able to destroy enough of them, or else one must make himself independent of the type one uses. When this problem is considered in connection with the employment of the surprise factor and air warning, it is also necessary to examine the matter of the location of bases. Bases must be established in the depths of one's territory in such a way that the enemy will be obliged to fly over a number of different routes through the warning system network to reach them. In this way the most exposed airfields will receive warning and be able to take measures in time.

It seems as though the best method in the immediate future will be to disperse the bases as much as possible and protect their vital parts by dispersion or underground installation. Later on, development may easily go in the direction of independence from the type of airfields we know now. We assume that this will not become a practical reality in less than 10 years. Planes which take off and land vertically have, however, already been flown. Remote control projectiles would be able to operate from far different and less vulnerable bases than the present airfields.

Bombing Offensive

The Western Powers would not likely engage in a preventive war even if it should clearly appear that an outbreak of war was imminent. For this reason the enemy will have the advantage of the initiative. In order that this advantage shall not be catastrophic, we must have the ability to start our bombing offensive as promptly as possible; first, to gain control of the air, and secondly, against the remainder of the enemy's war potential. This is a political matter, but it must be solved jointly by political and military leaders. The collective security organization must be in a position to make an instantaneous decision and to put this into operation without delay. It would be too late to put a bombing offensive into action after the political leadership of the indivdiual countries had come to a decision about the matter. Meanwhile, the war's decisive phase could be lost.

A nation which has an effective air-warning system can count on a few hours, perhaps much less, from the moment the enemy planes are picked up by air warning until the atom bombs fall. Today, strategic bombing planes operate at a speed below that of sound. In a yet somewhat distant future it will be possible to deliver the atomic weapons with bombers which travel faster than sound. The next step in development will be remote control intercontinental projectiles which have speeds many times that of sound. Those new means of delivery will further cut down the warning time. During this period one must be able to set in operation his own bombing offensive. One cannot wait until the bombs fall.

Political systems—with the exception of the United States—are not capable of making sufficiently rapid decisions and will not be able to get the bombing offensive underway in time. One may draw the conclusion that it is only the American President who, by virtue of his extensive authority,

is able to ensure world peace. It would hardly be fitting, in the long run, to regard the bombing offensive as an exclusively national affair, whether we have in mind the United States or any other member of the coalition of powers.

The only practical solution would seem to be to establish a superior, central political leadership which, together with the corresponding military leadership, would be given full power to make instantaneous decisions. This leadership also must be provided with the instrument for putting this decision into action. It must have at its disposal strategic bombing aviation, and there must be a joint plan for the use of tactical aviation; otherwise, resources cannot be used rationally.

Air Defense

Active air defense is, today, of less relative effectiveness than during World War II. The "Battle of Britain" may be safely said to be the operation which, more than any other, stands as the clearest example of what a highly developed air defense system can do. At the present moment it is difficult to imagine that defensive air operations in the future will be even approximately as effective. Percentagewise, the possibilities of shooting down aircraft has increased considerably; in fact, they have more than doubled since World War II. Development continues to progress, and still greater effectiveness can be conceived.

It was mentioned before that the concentrations on which civilization is based can be given only partial protection. Material destruction, especially as produced by the hydrogen weapon, can be but partially prevented by the aid of underground installations, stronger structures, concealment, the use of shielding, deception, and smoke screens. The loss of human lives can, however, be reduced to a considerable degree and the material damage can be limited.

Civil defense will find new and comprehensive tasks. Large-scale evacuations, fire extinguishing, first aid, and other measures for assistance must be prepared and ready to place in operation on short warning. It could turn out to be a matter of decisive importance that adequate stores of necessities had been established, and that there existed, in advance, an organization capable of dealing successfully with the different problems which will arise.

Special emphasis must be given to the matter of personal protection from heat and radioactivity. The American tests in the Nevada Desert in March of 1955 showed that it is possible to achieve relatively good protection against the effects of uranium weapons under field conditions, providing one uses suitable equipment and makes use of trenches. Above all, it will be of importance that the possibilities of protection be made known to both the civil population and the armed forces.

Electronic Warfare

Practically speaking, all means of aid in air warning, bombsighting, radio navigation, and the guiding of missiles are based, today, on electronic systems. It is, of course, a well-known fact that electronic aids can be interfered with and more or less put out of action.

The attacker will be able to obtain great advantages if he succeeds in putting the defender's warning system out of action. Likewise, defensive operations will be rendered easier if the defender succeeds in disturbing the sighting of the bombs sufficiently to prevent the atomic weapons from striking their targets accurately. This would, perhaps, be especially effective in the case of guided missiles. One can, therefore, anticipate a great deal of emphasis being placed on the development of aids for disturbing the action of all electronic systems. One can also, for this reason, draw the conclusion that a mechanical air war will have its limitations.

We may well believe that the present form of aircraft, namely manned bombers and fighter planes, will be the most effective during the 10-year period we are considering here.

War on the Ground

When one recognizes the fact that atomic weapons can cripple a nation completely and, practically speaking, paralyze its capacity for continued warfare, it is entirely obvious that ground forces can have no decisive influence on the outcome of a war. The era of large armies is past. One must concentrate on the forces which can have an influence on the first and decisive phase. Later, after atomic weapons have produced their effects, the ground forces will be given the tasks of mopping-up actions and occupation. One must, however, evaluate the importance of ground forces on the basis of the particular geographic areas, and the forces' possibilities and limitations in atomic warfare. The operations of conventional ground forces are characterized by the fact that the attacker must concentrate his forces in order to break through the defense. This results in the creation of a target for an atom bomb. If the defender can force the attacker to concentrate, he can use his atomic weapons effectively.

The same situation obtains in conventional amphibious operations. Amphibious operations of the scale of the Normandy invasion can only be conducted by a concentration of forces for the attack both during the landing and the organization of the bridgehead after the landing. An amphibious operation is, therefore, very vulnerable to the atomic weapon and can hardly be thought of as having any justification as long as it is exposed to the atomic weapon.

For the same reason no major actions for retaking terrain that has been initially lost could be considered. Such actions could only be undertaken after a decision had been obtained in the aerial war. Powers which are obliged to traverse sea areas and considerable stretches overland would not need to hold in readiness strong ground forces for their own defense. Forces which are to be used for the relief of other areas must be based on air transportation and be of lesser size.

In the areas which lie in direct contact with the front sectors, conditions will be considerably different. An attacker can obtain large advantages with relatively small gains of terrain. It will be difficult to retake those areas before control of the air has been achieved, and the atomic weapons have produced their effects in the areas to the rear and cut off the forces from their supplies. The principal mission of the ground forces in advanced areas during the introductory phase must, therefore, be to hold the land front at least.

Tactical Employment and Structure

The defense of the land front will be able to make very effective use of the atomic weapon. The prerequisite must be that the forces are organized in minor units which are very mobile and, to the greatest possible extent, independent in the matter of supplies. These forces must not be capable of being wiped out by the use of the atomic weapon. They must operate in a dispersed formation and their supply organizations must be distributed over large areas. The tactics must tend in the direction of a utilization of the terrain in such a way that the enemy will be forced to canalize his advance march and make major congestions of forces.

During an offensive, atomic weapons can hardly possess the same importance for ground forces as during a defensive war. Minor units can, notwithstanding, obtain limited advantages by infiltration. It seems clear that numerical superiority on the part of ground forces in a relatively small land area will hardly be of any consequence. Numerically smaller forces, with the support of atomic weapons, will

be able to defend a broad front effectively against numerically superior forces even if the latter also uses atomic weapons.

Battle on the Sea

The vulnerable links in future operations on the sea, from the standpoint of atomic weapons, are, more than ever before, ports, supplies, and the installations on which these forces depend. Naval forces cannot defend these vulnerable links against attacks and have no decisive importance in the introductory phase of a war.

The experiences of World War II show that surface vessels were unable to operate under the conditions existing when the enemy had control of the air. Generally speaking, this means that surface vessels will not be able to operate outside the areas which are dominated by their own aviation. After the battle for control of the air gives results on a global basis, these vessels will possess greater operational freedom. Initially, therefore, it will only be in the neighborhood of the local front sector that there will exist operational possibilities for surface vessels.

One type of vessel which can be considered to be of incontestable importance is the airplane carrier. Its use is hardly justifiable in defensive operations. It cannot defend itself, much less others. Moreover, present planes possess sufficient range to make the carrier superfluous in offensive operations. Its only justification today appears to be that it is more difficult to locate than a fixed airfield, providing it is at sea. If one could manage to protect airfields better, either by dispersal or in some other way, or by making one's self independent of airfields, the justification for airplane carriers in atomic warfare would be very doubtful.

The submarine will be the most important means for sinking tonnage which carries supplies over the seas, either by means of torpedo attacks or the laying of mines. Convoys must be dispersed more than before in order not to be vulnerable targets for atom bombs. In consequence of this the task of the submarines in torpedo attacks will be made easier. The submarine will, therefore, be the most important offensive weapon at sea. The submarine can also be used for other operations such as launching bases for guided missiles and the landing of minor sabotage groups.

Thus the vessels which will be of the greatest import in an atomic war are submarines and those which can combat them; next will come minesweepers. In local theaters there will also be operational possibilities for minor surface vessels in connection with infiltrations. The weight that will be laid on the individual types of vessels is dependent on many factors. One will have to weigh the advantages that can be obtained in the long run against the proportion of resources one is able to sacrifice for the purpose of maintaining in readiness, in time of peace, naval forces whose value in a war's initial phase will not be so great.

Conclusion

The atomic weapons have laid the foundation for a new political and military strategy. It is assumed that Communist aggression can be prevented if the anti-Communist world binds itself together with collective agreements so that no individual country will stand alone. When an attack on one country is tantamount to the unleashing of an atomic attack on the entire coalition of powers, minor, limited wars can be avoided—but the risk is increased of a world war which could destroy the civilized world as we know it today.

The prerequisite for preventing such a development is that it be made clear that atomic weapons will be used immediately and that a nation actually be capable of delivering the atomic weapons effectively

before the enemy is able to destroy it's capacity for delivering them, even though the enemy possess the advantage of surprise.

If this is to be achieved, there must be established a central political and military leadership with sufficiently full powers to react with the necessary speed. The atomic war's initial phase will be decisive, and it will be fought in the air.

During World War II it required three and one-half years to gain control of the air in Europe. Now, one must be able to gain it immediately. It must be won by means of offensives on a global basis.

One must react at the first penetration into the warning network and direct a decisive attack, in accordance with a coordinated plan, against the enemy's atomic takeoff bases in the course of, let us say, a couple of hours, or, further into the future, in a still shorter time. If this initial phase is lost, the war's final decision is settled. The war will be won, therefore, with the forces and preparations established in time of peace.

Military Government

Digested by the MILITARY REVIEW from a copyrighted article by Squadron Leader K. K. Ganguly in the "Indian Air Force Quarterly" January-March 1956.

ONE of the outstanding features of World War II was the phenomenon of military occupation of wide stretches of territory over long periods of time both by Allied and Axis armies. The necessity of some measure of control over the civilian population of the occupied territory is as old as warfare itself. But it was as late as the last war that military government assumed a practical role and acquired a political significance hitherto accepted rather lightheartedly.

Purpose

Military government has been defined as that form of government which is established and maintained by a belligerent by force of arms over occupied territory and the inhabitants thereof. It operates both before and after the end of organized resistance and sometimes remains in effect until a treaty of peace has been signed and ratified, but is more normally brought to an end as soon as satisfactory conditions have been created.

The primary purpose of military government is to advance the cause of arms and to promote the military objectives. This becomes apparent when we look at what the results of military government or civil affairs organization, or the lack of it, has meant to tactical operations and the general conduct of war during World War II. In the early stages of the war, when Germany invaded France and the French Army began to crumble, there was virtually no control on the civilian population by the French civil affairs officials. The roads of vital military importance were crowded with stragglers and refugees with the result that the movement of the French Army was seriously impeded. The Germans quickly capitalized on the situation.

Again, we see that the German policies with many countries they overran and occupied helped to bring about their defeat. The policy of bleeding a country for the fatherland did not pay off. Although the Germans were initially able to use Ukrainian nationals, they ultimately failed in this region of Russia because of German unrealistic and harsh treatment.

On the other hand there are instances

where civilian control and use of civilian resources had been directed to aid military objectives. During the Ardennes breakthrough on the United States First Army front, military government staff took immediate steps to control civilian casualties and evacuees. One report states: "During the first few hectic and confused days when chaos was the normal order of the day, security became the number one priority of business." From the outset of the campaign the purpose of the military government staff was to take the burden from the military and exploit its possibilities to the possible aid of the campaign.

In addition to the question of military necessity there is also a secondary purpose and responsibility under the international law: this is to maintain law and order in the occupied area, to feed the starving, and to protect the population against pestilence and disease. The requirement of international law is that when one nation drives the army of an enemy nation from its sovereign territory, the occupying forces will exercise the functions of civil government for the purpose of restoring and maintaining public order. It also requires establishment of a similar government in the liberated territory when the government of that territory is absent or unable to function efficiently, as was the case in France during the Allied advance through Western Europe in the last war.

The requirement of international law is, therefore, that military government must be established in both occupied and liberated territories when civil government cannot maintain order.

With the invasion of Sicily local and party officials and their top appointees had fled the island. Subordinate officials who had stayed on had neither the training, the ability, nor the will to take their place. They had obtained their unimportant jobs through party favor and had kept their posts through loyalty and fear. They were unprepared for supervising or directing the activities of which they were a part, nor could they help to devise new administrative techniques for an emergency situation.

Soon, moreover, it became clear that the organizations which controlled every aspect of Italian life—the collection of grain, oil, and other staples; the slaughtering of cattle; transportation; fuel; commerce; industry; rationing; employment; and social security—had collapsed long before the Allies reached Africa. In spite of everything the population of Italy was not unfriendly to the Allies, but it was too poorly organized to express its friendship in any concrete way. The control of Italian life thus became one of the important objectives of the military government in Italy.

War and Peace

Today, however, establishment of military government has assumed a much greater importance than the mere traditional concepts of military and humanitarian considerations. It is a means of obtaining an end. For each of the human groups engaged in a conflict the end is the imposition of its will on the other. As Clausewitz puts it, "War is the continuation of a nation's policy." It is, therefore, not sufficient to win a war. Victory merely gives one the status and authority to pursue the national policy toward the vanquished.

One of the important objectives of military government today is the preparation of the ground after the cessation of hostilities for the ultimate imposition of the national policy. While linked to the winning of war, it is even more crucial in the winning of the peace—a permanent peace which obviously will be our supreme national aim should this nation ever be forced to plunge into a war.

War has changed the old pattern of peacemaking. Modern war is no longer

a matter of the armed forces exclusively; and peacemaking is not merely the concern of diplomats.

Peacemaking proceeds on a much broader front, a strategic section of which is held by those who in foreign countries grapple from day to day with the problems of reconstructing national societies organized for war to peaceful purposes and of sustaining ordered life amidst the unprecedented devastation and dislocation wrought by the war.

The problems of Germany and Japan could not have been solved diplomatically. In these cases not only military occupation but military government was needed to prepare the countries for an internal order which would guarantee their future stability in a peaceful international society.

As long as we maintain a military force, the issues which a military government raises must be faced not only in furtherance of military operations but also in the discharge of our international and national obligations. Unfortunately, there is evidence of a lack of understanding of its problems and implications both among the servicemen and the politicians in authority. It has been clearly established earlier that a military government is not intended for national aggrandizement if such is not the national aim. It is not only the right but the duty of a belligerent to institute military government over a defeated nation: it is incidental to the state of war, and appertains to the international law.

Occupation Policy

It has been clearly demonstrated in the last war that without a clear and definite national occupation policy there is a danger of military government functioning in a manner which may jeopardize the governmental policy in the posthostilities phase. At the outbreak of the last war the Allies had no common or even individual policies for military government. It was only under occupational imperatives that the Allies had to give this matter their immediate attention.

Military government was established primarily in terms of the requirements of the combat phase, perhaps a natural and inevitable response to the urgencies of the moment. Little thought or attention was devoted to the problems of military government before the hostilities ceased. Even in Germany, in spite of every attempt to formulate the occupation policies after experiences in Africa and Italy, there was no evidence of any firm directive as the Allied armies pressed deeper into German territory.

As a result of this, America, Great Britain, Russia, and France, who were destined to share in the occupation, elaborated their own plans and each one of them continued free to follow their respective national instructions which were still in the process of making. These policies were being constantly adjusted after trials and errors and were chiefly concerned with "tearing things down rather than building things up." As the bitterness and casualties mounted the liberal humanitarianism came to be stressed less and less and a stern set of principles such as "denazification," "deindustrialization," and "demilitarization" were laid down to set the tone for the occupation.

The military authorities who were guided by the basic objectives of furthering the cause of military operations could not be expected to foresee the far-reaching consequences of their actions on ultimate political settlement. The primary aims in the combat phase were to protect the lines of communication, to discover enemy resources useful to the Allied war effort, and to crush the future warmaking potentials of the enemy nation. Policies of "denazification" or "deindustrialization" also were implemented with those primary aims in view.

But it soon became highly doubtful to what extent law or order could be maintained while still following the policies of tearing things down. Their actions not only created a political vacuum in the occupied territories, but reduced these areas to such a state of economic dependence that it soon started causing a serious drain on the Allied exchequers and energies.

It was only then that they realized that reconstruction of the German administrative system and revival of a sound political and economic life were necessary both for ultimate peace and the Allied cause—that these responsibilities should have been undertaken at the very start of the occupation and even during the combat phase to a certain extent.

A consideration of these anomalies and difficulties clearly shows that the process of peacemaking cannot be broken up into neatly defined stages according to historical precedent. The old sequence of an armistice, followed in due course by a peace conference, or possibly first by a preliminary and then a final peace, has become meaningless; it is not possible to draw a clear division between a military government and a diplomatic period.

The traditional view that the only legitimate objective of military government is to win the war and that it is a method of fighting behind the lines no longer holds good, nor is it any more true that military government should be nonpolitical in its action. It will, therefore, be dangerous to draw any distinction between the problems of peacemaking and those of the interim period.

There is no doubt that promotion of military objectives and security of the forces in the occupied territory are the immediate concern in the combat phase. The military government from the very outset should have a plan to start the healing processes of political, administrative, and economic rehabilitation. Our purpose will never be to loot or to despoil, but to lay the groundwork for the eventual restoration of political and economic life which would ensure a lasting peace. This is only possible if military government can function as an arm of national policy.

Without an active national policy as a basis there is a danger that military government policies may either be blocked or function at cross-purposes with the national aim. It is, therefore, vital that even the combat phase of military government administration is viewed and planned in accordance with the ultimate national policy toward the occupied territory.

"Public policy," observed an English judge more than a century ago, ". . . is a very unruly horse, and when you once get astride it, you never know where it will carry you." The occupation officials who are primarily concerned with the local situation cannot be expected to give decisions on the spot which will be in consonance with the foreign policy in its over-all aspects.

The development of an official doctrine of military government should be systematic and coherent and above all should not be forged in the heat of war when thinking is likely to be clouded with less humanitarian and shortsighted practical considerations.

Organization

In the early phases of the last war several efforts were made to fit military government into the traditional army staff organization. The best example was that of the 42d Division of the United States Army in Austria, but it worked out badly. Over half the activities of military government in the initial stages fell under the G4 staff, but its planning of supply activities left little opportunity for its personnel to become aware of the many regulatory problems which the military government and the economic supply agencies had to handle.

Efforts to supervise the legal activities

of military government by the legal section of the army were equally maladroit. There were some areas of control in which it was found suitable to allocate responsibility to the orthodox staff section. For instance, public health and sanitation problems were found incidental to the protection of troops and the medical staff and engineers found no difficulty in dealing with both. Even the provost marshal could organize the civil police service without interfering with the execution of his usual duties. But on the whole this organization proved unsatisfactory. In addition, the presence of the division general staff placed another administrative level between military government specialists in Austria and the Central Allied Commission.

The reason for the failure of this organization can be traced to three main causes:

1. While it is true that an army, like a government, has many activities to coordinate, their number is normally not so great as in government and the overall objective is clearer. Hence coordination through the general staff agency is more possible in army than in government work.

2. The problems of military government are so multifarious that even the governmental experts are not adequately trained in the field of government. Army staff officers certainly would be lacking in training that would enable them to handle all the aspects of a government besides their usual duties at the same time.

3. Because of unforeseen effects or resistance, almost any administrative or economic program is liable to modification while it is under way. To hold the road open for adaptation, it is necessary that the channels of communication and control between national and field officers be as short as possible.

The grouping of all military government specialist services in one place in the headquarters staff of an army or similar level proved to be a very reasonable method of organization. This concept of an entirely separate staff section to be concerned with civil affairs and military government activities was first accepted in the planning for northwest Europe.

The internal organization of the staffs and of the civil affairs/military government operating detachments was made to correspond as nearly as possible to the organization of the government of the country to be occupied.

In regard to the central agency connected with military government operations, no definite organization evolved until quite late. This was probably due to the fact that the authorities were not clear in their minds as to the scope of military government functions. Military security and aiding of tactical operations sometimes overshadowed the responsibilities for setting up economic and political administration.

Thus responsibilities for military government operations were shared by all the national, civil, and military departments so far as it concerned their respective problems. This naturally proved unsuccessful and a separate department had to be created to plan, coordinate, and direct all the aspects of a military government operation.

The concept of a special staff section to deal with military government affairs is true in respect to all levels of the controlling machinery. For purposes of coordination, planning, and quick transmission of directives it is essential that a specialized staff be organized even at the highest level. Personal knowledge of the problems, such as economic, political, cultural, psychological, and administrative, is essential for planning military government operations to avoid unrealistic directives.

Continuity

As for the control of this organization, it is obvious that the tactical commander should have full authority over the military government staffs or teams functioning in his territory during the combat phase. But once the interest changes, the control should also pass to the military government section of the higher formations. It should, however, be realized that the most important task of restoring civilian government has to be accomplished during the time of army occupation and that continuity of officers in charge of an area is highly desirable.

Furthermore, it is desirable to bring higher levels of civilian government into operation as soon as possible—even though their areas may not coincide with those of higher military units—to facilitate control and coordination at the earliest opportunity. The control organization should be superimposed on the organization of the occupied territory so that it is possible to coordinate from the center. Thus the policies would be uniform; line of control would extend from the central control agency to subordinate units, not through military tactical channels but through technical military government channels that conform to that territory's political organization.

The most important consideration is that the channels of communication and control should be quick and short. In politics lack of action and even delay of decision often produce results comparable to those of the actual moves. In short, the military government organization should have its own chain of command and, as far as possible, parallel to that of civil government of the territory under occupation.

Administration

It was a generally accepted theory before the war that "the personnel of the military government should, as far as possible, deal with the inhabitants through the officers and employees of their own government." Derived from this was the principle of the "avoidance of changes in existing laws, customs, and institutions." But these principles were ignored in the heat and bitterness of the war and the Sicilian directives came to prescribe a rather negativistic concept of military government whereby the entire Fascist regime was to be uprooted with its party, policy, and administrative machinery. This policy of epuration was an eye opener to the Allies.

One of the outstanding examples of this was in the sphere of supply problems faced by the Allied Military Government (AMG) staff in Italy. To ensure equitable distribution of foodstuffs to the civilians, the Allied Commission in the winter of 1943-44 took fairly rigorous steps. It set up AMG warehouses and staffed and even guarded them with AMG officers. Supply accounting staffs were established to followup on the sale of supplies to Italian consumers. But this resulted in both sabotage and misappropriation of the supplies. Native cooperation was seriously lacking in implementing the distribution program. The AMG did not have sufficient manpower to undertake both wholesale stocking and retail supply duties.

The real answer was not in AMG warehouses. It was, therefore, decided to turn foodstuffs and supplies over to the Italian civilian authorities immediately. This method made the Italians responsible for losses, relieved the AMG of detailed administrative responsibilities, and also provided an excellent opportunity for schooling Italian local officials in administration. Similar was the experience in matters of petroleum and other supplies.

In the liberated countries of France, Belgium, the Netherlands, and Luxembourg the policy was at all times to reconstitute the local government as rapidly as possible. Liaison officers attached to the Allied forces were used to assist in making necessary appointments, clearing out

collaborators, and, in general, organizing the new governments. This system proved highly satisfactory.

The problems of Germany were again different. Here the purpose was to wipe out completely the Nazi pattern and re-establish democratic methods and institutions. Although some functions were abolished, and Nazi-minded officials were removed, the same general pattern of local governmental structure was retained. The initial complex control of all government officers and activities in Germany, however, gradually developed into a policy of supervision and observation. The best example of indirect control was shown by some of the British officers. These officers who had learned something of the technique of indirect control by experience in British colonial practices used their knowledge with great success.

In legal and educational matters the Allies faced another problem. Their policy of "denazification" had led to the destruction of German books and literature, and to the imposition of new legal procedure. This hampered the educational policy of the Allies and it took many months before the German schools and universities could function again and this was only possible by reintroducing the same German books and literature with the aim of gradual substitution with literature without political bias.

With respect to the judiciary, the Allies found it extremely difficult to implement their policies with success. The German lawyers and judges were faced with different procedures and even the general public could not easily readjust themselves to the new changes, however better those might have been. Here, again, the policy of "go slow" was indicated.

Civilian Cooperation

This principle of indirect rule presupposes a substantial degree of civilian cooperation—a condition which is never difficult to obtain. This cooperation is essential not only to facilitate administration, but also to ease the manpower position. Besides the obvious paucity of manpower in war, the other overriding consideration is the allotment of trained personnel who will be able to operate every component of a civil government machinery.

Another defect in the military government administration in Germany was the constant movement and transfer of personnel. It was largely because of this that they found it at times difficult to maintain an adequate corps of administrators with the result that the realization of Allied political directives in Germany was being constantly interrupted and slowed down. But with the reorganization of the indigenous civil government staff this defect was greatly minimized. This fact not only reinforced the doctrine of indirect rule but established the need for permanence in the administration plans.

A study of these lessons clearly indicates some of the administrative doctrines a military government may adopt with advantage. The most important is the doctrine of "indirect administration." Colonial powers have always recognized the fact that the easiest way of controlling an alien population is to leave the formal exercise of political authority in the hands of the local inhabitants whom the people are in the habit of obeying and who can, at the same time, be more easily controlled by the ruling power.

Second, a military government must ensure "economy of effort" which implies minimum commitment consistent with the proper functioning of military government.

Third, the administrative plan should be flexible. In other words, the plan, as far as possible, should suit the people, the country, the time, and the strategical and tactical situation to which it is applied. It must be capable of change without undue inconvenience.

Lastly, the principle of "permanence"

requires that frequent changes in personnel or policy be avoided in order to ensure a continuity of policy. In addition to the fact that lack of permanence will hamper smooth implementation of national policy, there may be a danger of forfeiting the confidence and cooperation of the population in the occupied territories which can be ill-afforded for a successful administration in an alien and, possibly, hostile territory.

Training

A study of the foregoing will clearly establish the need for the key personnel in a military government organization to be very broadly trained. Many of the faults in the military government operations in World War II can be traced to the serious shortage of trained personnel. Military training is not sufficient to equip a person with all the qualities required of an administrator. Considering the vast field of administrative responsibility, it is essential for the planner to submerge himself in all the social, political, economic, and even linguistic factors of the country to be occupied which might affect his particular area of activity and to which he must base his program as it develops.

It is often argued that responsibility for military government operations beyond the combat phase is a civilian responsibility and hence there is little need for any comprehensive training in this respect. In fact, this view seems to be held by the military authorities in this country even today when other nations have profited by the lessons of the last war and are now prepared to revise their opinions.

It has been amply proved that not only was a changeover immediately after the combat phase undesirable, but retention of military personnel was of utmost importance long after the occupation phase. The Americans had to declare military personnel essential to delay their demobilization. It would have been organizationally impossible to change the control and would have been damaging to military governments. Military government had much to contribute to military facilities.

It was found that the basic military training was a great asset to run an administration in an alien territory. As H. Holborn said:

It would have gravely weakened efficiency of the American overseas administration if its continuity had been broken by a completely new corps of civilian administrators.

If we consider the complexity of the problem which a military government administrator has to face, it leaves no doubt that his political training should be similar to that required of a member of the foreign service and his administrative training as comprehensive as that of a civil servant. Such a cadre of trained personnel can be built up only with intensive and long training during peacetime.

Conclusion

Some of the persistent problems of civil affairs and military government operations have been treated in broad outline. But it appears evident that its problems are among the most subtle and complicated which must be appreciated by both the civil and the military authorities in this country, for it concerns the political life of the governed and the political objectives of the occupying power. There is no doubt that the Allied overseas administration had to be created on short notice and was ill-prepared to undertake the stupendous task—hence its many failures and blunderings.

Any organization which grows under the strain of war conditions is likely to fail in recognizing the subtleties of the problems it has to face, and in the field of human relations and international politics such a failure may be disastrous for a country's prestige. It is, therefore, im-

perative that we should give this matter some serious thought now.

A military government administrator will be successful in the fulfillment of his mission only if he possesses political understanding of the problems of the occupied country, and is specifically trained for their solution. To build up an organization for this purpose we must consider:

Creation of a single office under the Ministry of Defense to deal with all the aspects of a military government problem and the evolution of its doctrines and plans of administration.

Training of officers in the principles of administration of foreign territories.

A system of deputation of selected armed forces' officers to the Civil Ministries to gain practical experience in district, state/provincial, or central administration.

Even if some of these plans appear ambitious for the present, it must not be ignored that a ready pool of trained manpower for this complex and important assignment is vital. These men will be the ultimate redeemers of our national pledge and their organization and training should, therefore, be the central concern of our national policy in peacetime.

Economic Consequences of War

Translated and digested by the MILITARY REVIEW from an article by Manuel Torres Martinez in "Ejército" (Spain) March 1956.

Since about 1940 the economist has made continuing use of the study of history to assist in evolving the solution to problems of the future. This technique, of course, has long been used by military writers. An example of this can be found in the works of Douhet, *Luftherrschaft* and *Revue de deux Mondes*, published in 1937. Douhet's deductions, based as they were on the progress of aerial development, were actually prophecies which were confirmed in 1939.

Just as the mental technique of the theoretical economist is identical to that of the war theorist, so it can be deduced that the practical problems of economy are basically tactical and strategic exercises. This was amply demonstrated in 1944 by Neumann and Morgenstern in their "Theory of Games."

The struggle for market control requires the same procedures as for battle. Many times an economic factor is a reason for war, and it is economic strength which has determined the victor in the last two world wars.

War brings with it an inevitable destruction of equipment and economic produce; total or at least partial isolation which interrupts commerce and the supply of food and raw materials; losses in production due to enemy action against the nation's war materials-producing potential; and inflation in great or small degree. All these are immediate consequences of war, fresh in the minds of most people of the world as an indelible remembrance of the last world war.

War also involves a special economy organization. Since the major part of a nation's resources must be destined for war production, rationing, forced labor, price ceilings, and tax increases are usually substituted for normal marketing processes.

In addition, there are the economic problems relative to the preparation for war. These are usually studied under the title of "military economic science," and there can be little doubt that this is the study with which the world is currently concerned. It should be noted that, mostly because it is essentially preventive in nature,

military economic science has been developed to a much lesser degree than war economics and the rehabilitation problems the world has recently experienced.

"Military Economic Science"

Military economic science problems occur principally because the war of the future is not likely to be the same as the war of the past. If it were, it would be enough to simply extrapolate past data into the solution of future problems. But nothing guarantees this repetition. To the contrary, the development of atomic power assures us that a future war will differ from all previous wars, and new and decisive factors will undoubtedly characterize a future conflict.

The simple expedient of extrapolation cannot be used. Future developments must be predicted in consonance with the probable advances in technique. Thus a new element appears which is difficult if not impossible to evaluate correctly, and makes an accurate estimate of the future a virtual impossibility.

There are, however, two problem areas of military economics on which we can confidently base certain limited predictions. These concern raw materials and the transformation from a peacetime to a wartime economy.

War involves an increase in the consumption of raw material, particularly those of a strategic nature. The nation that has sufficient raw materials from its own sources in peacetime has only the problem of increasing the production of these materials for wartime usage. This problem can be foreseen and prepared for. However, other nations may have to import part or all of their raw materials. The solution to the problem for these nations is not always so easy.

Production Substitutes

The nation that has to import raw materials in peacetime will, to a certain extent, be forced to plan for production substitutes. This is, in general, a technical problem. In past decades the history of industrial evolution is filled with examples of substitutes which have attained decisive success. Textiles exemplify this perfectly. Cotton has often substituted for wool, hemp for linen, and in modern times synthetic fibers are often used in place of all kinds of natural materials. Note should also be taken of the accelerated development of synthetic rubber during the last war.

There are certain raw materials, however, for which no reasonable or usable replacement is currently available. In preparation for accelerated wartime consumption, the nation that does not possess these materials must resort to other procedures to assure resupply in case importation is halted or prevented.

Strictly speaking, the production of substitute or replacement materials is not a problem of military economy. Economic history shows that the market variation which determines the price of an article has been principally responsible for the production of replacements and substitutes. However, they are often developed by war economy as a matter of wartime necessity.

Another method of overcoming a shortage of raw materials is by making better usage of what is available. This is not a strictly military economic problem. It concerns normal economic processes, and sufficient stimuli can be found in normal marketing practice to initiate the technical advancement to better use of materials. However, war certainly is a stimulant which hastens the process.

Actually, the greatest technical improvement in usage of materials has occurred in peacetime. For example, during the period between the two world wars gasoline engines were increased in horsepower by four times without increase in weight, and new advancements were made in the pro-

duction of copper and lead, and in other materials such as textiles, rubber, and lubricants. On the other hand, the great technical accomplishment of the development of nuclear energy, at least in its application to war, was undoubtedly accelerated by the strategic requirements of World War II.

But any and all of these procedures, dependent as they are on technical progress, are open to all countries. In the developmental race which culminates in the holocaust of war, ultimate victory goes to he who possesses the best technique. It would appear, therefore, to be more important to improve the technical methods of research than to direct them toward the attainment of a particular result.

Stockpiling

Finally, it is obvious that scarce raw materials can be stored against future need. It is natural that during times when international tension threatens war, countries will stockpile the raw materials they must import. This occurred on a large scale during the months preceding World War II when the heavy demands of the large countries upset world markets, causing a general increase in the prices of certain raw, basic, and strategic materials.

Under these circumstances, storage, with all its inconveniences, is a prudent measure and one of foresight. But when the risk of war is remote, the advantages and disadvantages of stockpiling must be carefully considered.

It can be certain that stockpiling of war material will result in an immobilization of capital resources which detract from normal production. This forecasts a weakening in the national capacity for investment and a consequent reduction in the future economic strength of the country. Since stockpiled reserves are just as important from the strategic as the economic point of view, and since these reserves must be tremendous to be of any long-range use, the problem of location of depots must be carefully considered. They must be either concealed from or out of the range of possible enemy air attack.

And as a final word on stockpiling, the perishability of some items makes it impossible to store them for any protracted length of time. The shortage of these items, therefore, cannot be solved by such methods.

The transformation from a peacetime to a wartime economy is usually called industrial mobilization. Although the transformation refers generally to industry, it also affects agriculture, and almost always imposes a radical change in commercial consumption.

The plan for transformation to a wartime economy must include a selection of which productive activities must continue and which must be discontinued; what new industries are needed; what industries must increase or decrease production; what industries and factories will change products; and, in a general way, which particular industries will produce certain products.

It is thus easy to understand the necessity for major powers to keep a detailed industrial census. While this may not be absolutely necessary for a peacetime economy, it is vitally necessary if a nation is to make the transformation from peace to wartime economy with the least waste of time and effort.

Closely linked to the production transformation problem is the requirement for industrial reserve organization, called the "Shadow System" by the British. Two typical examples of industrial reserve accomplishments during the last war are the transformation of the automobile factories to the manufacture of war vehicles and of piano factories to the manufacture of wings and propellers for planes. These and other cases show the necessity for planning the equipment and machinery for the new production, in many cases involving the installation of new machinery

which must subsequently stand idle and inoperative during peacetime.

The extraordinary flexibility of American and British industry during the last war was undoubtedly due to the existence of industrial reserve "shadow teams" which in a matter of months were able to swing into full operation, causing a tremendous increase in war production in the same measure that the supply of commodities required during normal periods diminished. Up to this point experience has been so abundant and instructive that at present the maintenance of industrial reserve teams has become widespread, especially in the United States.

It is evident that this poses far-reaching economic problems. Certainly the reserve equipment signifies a multiplication of the fixed costs in which the economy of the nation carries an enormous burden. United States military economists have determined that approximately 90 percent of their industry has military interests, and a reserve team affecting almost all industry represents an unusual burden to production. If one considers a nation specializing in export production, the burden of additional fixed costs becomes intolerable and is industrial suicide.

The maintenance of reserve equipment entails the risk of technical and economic aging—renovation costs are practically the same for idle as for active equipment. Excluding less important difficulties, this amply demonstrates some of the problems of military economy.

The best way to avoid such difficulties is to make export industries out of military industries. Thus in a period of war the exportable surpluses serve to satisfy the country's war consumption needs. In this way the necessity of having idle equipment and the losses inherent to its idleness are eliminated. This has been traditionally the policy of the great powers—to convert armament producing industries into export industries. But considering total war, when virtually all industry has military interests, almost every industry should be converted into a peacetime export production if we are to avoid the inconveniences resulting from idle equipment.

War Expenditures

It has been said that during a war expenditures are not important, and from this it has been presumed that the same is true of the costs of idle wartime economy equipment. This is a cunningly deceiving statement because it does not pertain to a war economy but to a peacetime economy prepared for war. In war as in peace necessary expenditures *are* important, and needless expenditures are all the more important, and more burdensome in war than in peacetime, because shortages are more acute. Expenditures are nothing more than a monetary expression of some real commodity, of some economic goods which are consumed.

It has often been said that war is financed by inflation, but experiences in 1914 and 1939 have shown that inflation undermines the politico-social order of the country and through the waste it causes tends to deteriorate the nation's resistance. Experience has corroborated that inflation was one of the acting forces in the collapse of Italy in World War II.

On this point the lessons learned from the experience of World War I were such that from the very beginning the United States and England did their best to avoid financing World War II through inflation. It can be said that they attacked and resolved the problem successfully.

While we begin to discuss planning problems in detail, as well as those related to the technical transformation of production, it becomes evident how a country's military strength lies in the strengthening of its production and the development of a great industrial capacity. From this it is also evident that the means and objectives of a military economy are exactly the same as the means and purposes of a

peacetime economic policy; and that an appropriate general economic policy is, therefore, the best military economic policy measure. Production mismanagement and the lack of coordination in its different branches handicap the development of a country and reduce the standard of living of its inhabitants; but a decrease in economic strength reflects adversely on military strength. In this as in most cases there is no difference between the objectives of a military economy and the objectives of a peacetime economic policy.

Commerce

We find this same harmony of objectives in the problems posed by foreign commerce. Frequently, protective measures favoring industry have been unduly defended for military economy reasons. When arguments swing in favor of a specific industry, for the purpose of establishing and developing it, it is only acceptable as a protective measure to young industries.

A policy of indiscriminate and nonstimulating protection increases production costs, places the country on an unbalanced competitive basis, reduces its import and export capacity, and consequently impairs supply.

Military economy as well as peace policies require the development of international trade, unrestricted availability of imports, and an increased export capacity. These objectives should never be confused with the very similar but different objectives of international free trade.

Actually, the concern shown by the United States for the furtherance of international trade among the free countries is a measure which might well be advised by both a welfare economic policy and a military economic policy. Excellent proof of this is the recently announced policy of the Communist bloc favoring a broadening of international trade, evidently advised more because of the Soviet military economy than because of their concern for the welfare of the people under their control.

A reinforcement of a country's export capacity tends to reinforce its military strength, not only because export surpluses are reserve stocks in case of war, but also because in this way economic strength is increased. However, export capacity depends on the efficiency of equipment, fixed costs (taxes, interest, and raw materials), salary and price levels, and on industrial management. Consequently, everything acting favorably on these factors is an advantage from the standpoint of a general economic policy and of military economy.

Furthermore, international traffic depends on the removal of financial obstacles which create a lack of fluidity of capital movements from country to country. It has been said that rationing is imposed when a country's currency is scarce. This seems to be an obvious and elementary truth. Nevertheless, rationing itself creates shortages since it predetermines a lack of foreign credit or capital so that currency restrictions generate future restrictions.

We are in a vicious circle here from which it is difficult to escape. Without a doubt a removal of financial obstacles, particularly those established from absurd fears, will bring about opposite results and cause an influx of foreign capital with subsequent beneficial effects on the equilibrium of investments and supplies.

It can readily be seen that the policy of freedom of movement of capital supported by the United States is a measure which contributes not only to the reinforcements of that nation's economic strength but also to the growth of its military economy.

It can be concluded that all the measures contributing to the formation of capital have a perfectly symmetrical quality in the policy of economics and military economy. The facilities available to commerce and international transactions, the elimination of monopoly from the system, the promotion of the spirit of free enterprise, and the financial policy measures

favorable to investments are purely orthodox measures from the standpoint of reinforcing the military strength of a country.

One cannot imagine a modern state without a permanent army and, therefore, without a supply of armament and a regular production of war material. The necessity for possessing a certain amount of armament cannot be denied, even though it be for nothing more than the preparation and training of personnel. This brings us, of course, to the problem created by the armaments race undertaken by the great powers in certain periods of international nervousness and tension.

Volume of Armament

From the military economy viewpoint the factors determining the volume of armaments required are as follows:

1. The duration of the transformation period from a peacetime to wartime industry. It is easily understood that the greater the duration period, that is to say, the less the ability of industry to effect a change in production, the greater should be the volume of armament available.
2. The general political situation.
3. The armament level of possible rivals and neighbors.

The last two factors, because of their external character, are not very susceptible to influences from within the country. However, the first factor is of utmost importance at the present time because we are presently in a period of technical revolutionary transformation, and the maintenance of great stockpiles of war material constitutes a dead weight which may become technically old from one day to the next. That is why the efforts of all nations are bent on reducing to the minimum the duration period of transformation from a peacetime to a wartime industry, at the same time greatly reducing the armaments actually used.

Moreover, the maintenance of relatively large stocks of armament involves the permanent investment of resources which cannot be used in peacetime production and in the creation of new capital, and which naturally tend to slow up the economic growth of the country—an objective contrary to the goal of military economy. As a result, the armaments race is less suited to nations with a lesser grade of industrialization, less perfect techniques, and a weaker equipment and production potential. The armaments race is best withstood by those nations who are the strongest.

Conclusion

Therefore, taken from a military economic point of view, an armaments convention in which a pact is made on weapon restrictions is more suitable to weaker nations. For this reason it is not surprising that a Russian peace offensive has appeared quite recently. It is the logical consequence of a well-meditated military policy.

In the armaments race the Russians compared to the Americans are at a disadvantage, but given the advantage of time, techniques can be perfected and the corresponding capital raised for a greater ultimate development. The Russian peace offensive is not inspired by welfare economic policy objectives but by well-meditated military economy measures. As a matter of fact, day by day the only country which can participate in the armaments race and even profit by it is the United States of America.

The Jungle Belongs to Us

Digested by the MILITARY REVIEW from an article by the Editorial Staff in the "Australian Army Journal" June 1956.

THERE is a school of military thought which maintains that so long as an army is thoroughly trained in basic principles it can fight anybody, anywhere. While there can be no doubt about the necessity for thorough training in basic principles, this idea overlooks, or too heavily discounts, several important considerations.

In the first place war is not a theoretical business like pure mathematics, science, or pure anything else. Principles cannot be applied in the raw as it were. They can be applied only through the medium of the means and the techniques available. It is the application of principles through the medium of means and techniques that constitutes the entire art of war. And, in point of historical fact, practically all successful commanders have devoted much thought, time, and effort to perfecting the means and the techniques before using them to apply principles.

Other things being equal, the successful army will alway be the one that has developed superiority in the techniques appropriate to the particular conditions of warfare in which it is engaged. Many a superbly trained army has met with disastrous defeat because its leaders failed to realize that the techniques which have proved successful under one set of conditions will not necessarily succeed under a different set.

For example, the German armies which drove victoriously into the Soviet Union in World War II were superior to their adversaries in almost every respect—while the fine weather lasted. When winter closed down it was a different story altogether. It was not just a matter of a deficiency of matériel suitable for the Russian winter. The Russian soldier, skilled in the techniques of winter warfare, proved a superior fighting man to the same German soldier who had defeated him under summer conditions.

Nearer home the Japanese were at first quite effective against us because of their mastery of the techniques of jungle fighting. However, once we had made our jungle techniques superior to theirs, the advantage, and the victories, were on our side.

Conversely, the same German Army that met defeat in the East had, only a few months before, been brilliantly successful in the West. It was successful primarily because it had developed tactical techniques admirably adapted to the conditions encountered. The attempt to apply the same techniques in the East to different conditions of terrain, climate, and space led to failure and ultimately to irretrievable disaster.

In the past some armies were fortunate in that they had a fair idea well in advance of the conditions of terrain, armament, and space under which they would most likely have to fight. Today, because of the introduction of atomic missiles, it is peculiarly difficult for all armies to make this forecast with any real degree of accuracy. Nevertheless, some armies are in a better forecasting position than others because it so happens that the natural peculiarities of the area in which they are likely to be employed demand certain tactical techniques which will be required in atomic warfare anywhere.

In his book, *Defeat Into Victory*, Field Marshal Sir William Slim forecasts the future pattern of military operations in these words:

Modern war, with its destruction of bases, disruption of communications, and

disorganization of control, will, if they are to operate at all, compel armies to disperse. Dispersed fighting, whether the dispersal is caused by the terrain, the lack of supplies, or by the weapons of the enemy, will have two main requirements—skilled and determined junior leaders and self-reliant, physically hard, well-disciplined troops. Success in land operations will depend on the immediate availability of such leaders and such soldiers, ready to operate in small, independent formations. They will have to be prepared to do without regular lines of communication, to guide themselves, and to subsist largely on what the country offers. Unseen, unheard and unsuspected, they will converge on the enemy and, when they do reveal themselves in strength, they will be so close to him that he will be unable to atomize them without destroying himself. . . . The use of new weapons and technical devices can quickly be taught; to develop hardihood, initiative, mutual confidence, and stark leadership takes longer.

Mobility

In consideration of warfare of this type —units and formations living and moving dispersed and concentrating for battle— most seem to have in mind the motor truck or some other means of conveyance. They *might* be able to do it that way in Europe or in the Middle East, but will the Australians be able to do it in the area in which, if present trends continue, we are likely to fight? Looking at this probable area of employment we find that much of it is covered with thick jungle. Other large areas are covered with growth not quite thick enough to be called jungle but which, nevertheless, constitute quite serious obstacles to close maneuver. Even much of the ground that is free of trees and scrub will, because of the nature of its surface, impose dispersion. The entire area suffers from underdeveloped communications, and not much of it is suitable for the extensive use of motor vehicles for troop movement.

This terrain need not necessarily prove disadvantageous—provided we develop the techniques necessary to extract from it every advantage it does possess. Those advantages are by no means inconsiderable, and it so happens that the techniques necessary to exploit them are the very ones imposed by the conditions of atomic warfare almost anywhere, except, perhaps, on the naked desert.

Can a better place than the jungle be imagined in which to hide units and formations from an enemy aircraft, armed with an atom bomb, looking for a suitable target? Troops living and moving in those friendly places will be hard to find.

The word "jungle" needs to be clearly defined. Strictly speaking, it is commonly used to describe thick tropical growth, the type the Australian Army became accustomed to in the Pacific campaign. We should, however, think of jungle as all growth which seriously impedes visibility and movement, precludes the use of "normal" tactics, and which breaks up formations and tends to isolate units and subunits.

Clearly, any terrain with these characteristics demands the development of special techniques if any army is to operate successfully on it. Australian soldiers learned that lesson the hard way once; need we do the same thing again? There is a great deal of that type of country in the area in which we will most probably be employed.

At this point it may be well to glance at the militarily untutored characteristics of the men who will form the great majority of any Australian army. A few, a very few, may be accustomed to the bush. But by far the greater proportion of our soldiers will be city dwellers or men from open farm lands. Nowadays few Australians ever forsake the hazards of the highway.

Training

To dump such men into thick country without adequate training is to deliver a shattering blow to their nervous systems. They cannot see anything but vegetation, they cannot move easily, and they become confused and get lost. And if they know that the enemy is close at hand, the flutter of a butterfly's wing becomes a menacing roar. Fire off a few shots and they will be reduced to a state of prostration. They will have lost their nerve as well as their direction—and probably half their equipment as well.

There is no halfway house in training for work in the deep jungle, or even moderately thick growth. It is all or nothing. In the military sense a man is either at home in scrub, heavy timber or jungle, or he is a lost soul in a weird, twilight prison. He cannot fight and he could easily die without any assistance from the enemy. This happens because he is suddenly confronted with something entirely new and quite frightening, with problems which nothing in all his experience helps him to solve.

Conversely, if a man of good physique and average intelligence has been thoroughly trained in the techniques of living and fighting in the jungle, the effect of coming out in the open is not likely to be so shattering. He might yearn, he probably will yearn, for the friendly shelter of the scrub, but the experience of open spaces will not be entirely new. The environment will at least be familiar. If a man is first well grounded in basic principles, and then trained for the worst case, he will be able to cope with it.

Since so much of our probable area of operations is covered with varying densities of vegetation, it is no more than common foresight to make every possible effort to develop and inculcate the techniques that operations on such terrain demand. There is too much scrub to dodge all the time; we shall have to get into it as often as not. We ought to make certain that when we do go in we are on top, well and truly on top, of anyone else in there with us. We ought, indeed, to go further and aim to make ourselves so good at the game that the scrub becomes our natural fighting habitat. We should aim to get the enemy into the jungle whenever we can and there, by means of our superior techniques, destroy him.

Training in jungle warfare means a great deal more than teaching the individual and small subunits how to live, move, and fight in thick country. It means digging deep into our minds, tearing out by the roots some ideas which have become second nature, and reshaping our thoughts to meet the problems of dispersion imposed by the terrain or by atomic weapons, or by both. We are all talking about the necessity of dispersion, but how many of us are doing anything about it? Are we really thinking about the problems of command, control, and administration that will inevitably arise in a big way?

We talk about dispersion and quick concentration for battle. When we talk like this how many of us have the motor truck or the airplane, or some other means of conveyance, in our subconscious minds? Sir William Slim has a more realistic view for he visualizes formations and units moving dispersed and concentrating for battle on foot.

Atom bombs or not, there will not be too much truck movement where we are likely to go. People will have to get used to the idea of going places on foot, with their ammunition in one pocket and a week's rations in the other. Unit and subunit commanders will have to learn how to keep their troops going in isolation for long periods, how to lead them over miles and miles of jungle country to arrive at the right place at the right time.

Formation commanders and staff officers need to forget, temporarily at any rate, about motor trucks and the other conven-

iences of conventional warfare, and start thinking how they are going to direct, control, and maintain their troops in unconventional tropical areas where the atom bomb is liable to be an additional hazard.

Dispersion

Instead of dumping down reserve and home-guard units in one concentrated lump for their annual camps, let us disperse them over miles of adjacent hills and dales. Let us get everyone used to the idea that that is normal and that concentration is abnormal. Only by doing something about dispersion are we likely to master the techniques it entails. It would, for instance, be interesting to see how many platoons of a battalion dispersed over about 50 square miles of rough country could make a night march, or even a day march, and arrive in good shape at the appointed place and the appointed time.

In World War I the Australian infantry adopted a policy aptly summarized in the expression: "No man's land belongs to us; our frontline is the enemy's wire." It would not be true to say that they invariably succeeded in enforcing that policy, but they nearly always did. And wherever they went they fought unremittingly to make it fully effective.

In World War II the tradition paid handsome dividends when we substituted a few words and expressed the same principles in the policy: "The jungle belongs to us." In view of our probable area of employment, can anyone suggest a better basis of training?

Rocket Propulsion and Its Implications

Digested by the MILITARY REVIEW from a copyrighted article by Mr. A. V. Cleaver in the "Journal of the Royal United Service Institution" (Great Britain) August 1955.

ALL self-propelled vehicles which have left the Earth's surface employ some form of reaction propulsion. That is, they generate their forward propulsive thrust from the reaction created by throwing backward a mass of working fluid, just as a gun recoils against its firing point because of the shot and the propellant gases expelled in the opposite direction. This is equally true of the airscrew, the helicopter rotor, and the turbojet; all act on the air in such a way that a certain mass of it is accelerated rearward.

The rocket powerplant belongs to this same family of reaction propulsion devices, but with a most important and significant difference. A rocket propulsion system is one which carries along, within the vehicle being propelled, *all the material necessary to provide its propulsive jet.*

Thus a turbojet vehicle carries fuel as a source of energy, but relies on oxygen obtained from the atmosphere to burn with it, and so release its energy; atmospheric air provides the bulk of its propulsive jet. A rocket, on the other hand, is self-sufficient in reactive chemicals, and the whole mass of its exhaust initially belongs to the vehicle.

The consequence of this essential difference is that, whereas the turbojet or any other air-breathing engine can produce a thrust only directly proportional to the density of the ambient air, a rocket propulsion system can provide thrust independently of its environment. A rocket engine, in fact, actually produces a slightly higher thrust when exhausting into a vacuum than it does at sea level.

Besides this fundamental characteris-

tic, rocket engines have another very important secondary quality. Because of their essential simplicity, and the fact that they normally employ working fluids of great energy and high density at high pressures and temperatures, they can deliver very large thrusts from a small size and weight of apparatus. But it is only under conditions of very fast flight at great altitudes that this jet is itself an efficient means of propulsion. There are some applications (for example, the takeoff assistance of aircraft) in which the convenient ability of a small, light, rocket engine to generate high thrusts for relatively short periods outweighs its handicap of a high fuel consumption which, in turn, results from its need to carry its own source of oxygen as well as fuel.

The rocket is, indeed, the only practical means which we know for traveling beyond the Earth's atmosphere, because of its complete independence of its environment. The only conceivable alternative to it would be some device for directly manipulating gravitational fields; if such a thing is ever invented as a result of new scientific discoveries, then everything which is said here about rocket propulsion will apply equally to it also.

The Past

The rocket is quite an ancient invention. It was in use in Asia many centuries ago, first as a firework and then as a primitive weapon of war. These oriental "fire arrows" were adopted by the European colonizing nations and improved to the extent that Sir William Congreve's bombardment rockets were regarded as an important weapon of the British Army in the early 19th century. Superseded, in turn, by the development of more accurate long-range guns, the rocket relapsed for a time into being a toy to be brought out of retirement on Fourth of July. It retained some practical uses for signaling and life saving, in both service and civilian life, but was certainly never thought of as having any large potential for influencing human society or anything else.

Then, about the turn of the century, a number of pioneers recognized in the rocket a potential means of realizing an almost equally ancient dream, that of traveling to other worlds than the one which man has always known as his home. A number of small amateur societies began to develop the liquid propellant rocket, albeit in a crude form and on a very small scale. Some of them were also conscious of the more immediate applications of rocket propulsion in aviation and for bombardment weapons of even the greatest range, but in almost all cases the main motive of this rocket renaissance was an interest in the possibility of space travel.

The hardheaded German Wehrmacht, especially after the rise to power of the Nazis, undoubtedly took a greater interest in the more immediate potentialities of rocket propulsion. Their experimentation resulted in the development of the *V-2* and a whole range of other rocket weapons. Rocket assistance also was used for heavy bombers and for the propulsion of high performance interceptor aircraft like the *Me 163*.

By way of contrast to our great work on radar, jet propulsion, and atomic energy, we in Great Britain had done relatively little in the field of rocketry by that time, beyond producing a number of short-range solid-propellant rocket weapons. There were, of course, some quite sound military reasons for this; few of the applications of rocketry to warfare which were practicable at the time would have been of equal use to us as to our enemies whose war situation was quite different. Not a great deal more had been achieved in the United States, although some work on liquid-propellant rocket propulsion, for both missiles and aircraft, had been carried out there. In 1945, however, the full impact of the German effort was felt as

the results of the Allied interrogation teams began to become available.

The Present

Since the war there have been a great many outward and visible signs that the German lead in applying rocket propulsion to guided missiles and aircraft has been energetically followed in various countries, not least in the USSR. Another reasonable guess would be that the work actually in progress extends far beyond the scope of available published information, but even this reveals that the last decade has seen further strides in rocket performance.

The Americans have two piloted rocket-propelled research aircraft, the *X-1* and the *D-558-2 Skyrocket*, which have flown at speeds exceeding Mach 2 and at altitudes of over 15 miles. They have announced the forthcoming trials of a third, the *X-2*, of even higher potential performance, and also a whole range of rocket missiles. These include the *Terrier, Sparrow, Nike, Corporal*, and the large *Redstone.*

Another considerable field of postwar rocket activity in the United States has been a high-altitude research program in which unmanned rockets have been used to gather data on cosmic radiation and other physical and meteorological phenomena in the extreme upper atmosphere. In the course of this work a *Viking* rocket has ascended to a vertical height of 158 miles, while a two-stage combination of a *V-2* lower component and a small *WAC-Corporal* has reached 242 miles. Also, monkeys and mice have been successfully shot to a height of over 60 miles, and been safely recovered using specially instrumented *Aerobee* rockets.

The French also have a rocket named *Veronique* for upper atmospheric research, and have demonstrated a piloted rocket-propelled interceptor aircraft called the *SO 9000 Trident.* Some information has been released on British rocket test vehicles and guided missiles of the air-to-air and ground-to-air varieties, while the Swiss Oerlikon concern also has announced a rocket of the latter type.

The Future

The next few decades will undoubtedly bring forth many more spectacular examples of supersonic rocket aircraft and guided missiles. In the latter field, especially, progress will be very marked, leading eventually to the production of very long-range intercontinental missiles. Of course, not all missiles will necessarily be rocket-propelled; however, the trend toward rocket propulsion is inevitable as higher speeds and altitudes and longer range are demanded.

As to how long such changes may take to come about, all that can be said with any certainty is that it will be a very much longer and more gradual process than is usually suggested by the prophets of pushbutton warfare but perhaps not quite so long as the most conservative armchair skeptics may believe. And one day it is likely to supersede the strategic bomber as the dominant factor in at least the early stages of any major war.

Its very existence as such a factor, together with the truly horrifying capabilities of the nuclear warheads which it would deliver, may constitute our best hope that such a war will never occur at all. The potential aggressor would have a perfect weapon for instant attack without any appreciable warning, but stalemate would result from his certainty of an immediate and equally devastating retaliation.

Because the long-range rocket is certain to be produced in the relatively near future, we may also be fairly sure of at least one further development. Probably within the next decade some adaptation of such unmanned vehicles, to form a multistage rocket assembly, will be used

to provide the Earth with a small and probably temporary artificial satellite. It would carry automatic instruments which would radio their readings of scientific data back to base, and it would form a most logical and invaluable extension to the large program of high-altitude rocket research which the Americans have already undertaken. This is a project which has received a very great deal of serious scientific attention in the United States and elsewhere during the last few years.

Larger winged satellite rockets, capable of carrying human crews and landing back on Earth as high-speed gliders, could be built. Eventually, large permanent satellite stations might be assembled out in space from prefabricated components laboriously ferried out by such vehicles which also would be used to relieve their crews and supply them with essential stores.

Von Braun, in his book *Across the Space Frontier*, has frequently emphasized the potential military value of satellite stations of this type as invulnerable bases for reconnaissance and missile launching. This seems highly improbable, for if one nation could establish such a station, it should not be beyond the powers of another to bring it down. Professor L. H. Thomas of Columbia University recently has suggested the obvious way to do this, by exploding small guided missiles approximately in the path of its orbit, and so providing a cloud of what might be called cosmic shrapnel capable of puncturing its skin. However, it cannot be said that piloted satellite rockets could have no military uses, even of the kind envisaged by Von Braun, provided they did not linger overlong in stable, predictable orbits.

In the same way as space stations might be constructed, and in all probability sooner in time and with fewer difficulties, specialized rocket vehicles for the navigation of outer space might be assembled beyond the atmosphere. Their propellants could be ferried out to them for repeated voyages, again making use of the winged satellite rockets for this refueling duty. There is little doubt that the future also could bring the application of nuclear energy to rocket propulsion.

It should be emphasized that no responsible member of the growing band of believers in space flight expects it to be achieved in the very near future. It may be 50 years or more before a man lands on the Moon, but it is, nevertheless, quite reasonable to predict now that such an achievement could one day be possible. The foundations for it are already being laid in all the contemporary rocket research for military and other purposes.

Another point which should be emphasized is the gradual nature of the future development expected for astronautics. It will be an evolution closely analogous to what in fact *has* happened in aeronautics. One step, one invention or discovery, one practical achievement will lead logically to the next one. Each new step will no longer seem quite such a fantastic or impossibly daring thing to attempt as it now does to us for whom most of the history of the subject still lies unwritten in the future.

It is certain that a complete program of research leading to interplanetary flight would involve the expenditure of many thousands of millions of dollars spread over several generations. However, much of this money will in any case be spent, for quite different reasons, on such predominantly military projects as aeronautics, guided missiles, and nuclear energy. There are some quite valid "practical" reasons for achieving the earlier phases of space flight, such as the satellite vehicles, and these may in themselves ensure its adequate support initially. Finally, however, there must come the later, purely interplanetary phases of the development.

For these reasons many feel that when space flight is technically practicable, as

it will become during the next few generations, it will in fact be achieved.

The Implications

The implications of all these developments to human society fall into two classes: the physical or material, and the psychological or spiritual.

The first and quite indisputable fact to consider is that the development of rocket flight beyond the atmosphere will add greatly to our scientific knowledge. If the past century has proved anything at all, it has clearly demonstrated that the apparently abstract piece of scientific knowledge of one generation, or even one decade, is the basis of important military and civil applications in the next. The electrical phenomena which were the curiosities of Faraday's laboratory before many years were giving light and power for cities and providing long-distance communications by telegraph, telephone, radio, and television. More recently we have seen the academic arguments of pure physics in the 1920's develop into the greatest potential means of waging war or of replacing our decreasing stocks of coal and oil as a source of energy.

When rocket vehicles, first unmanned and then later with human crews, can achieve extended satellite flight in space, their usefulness for gathering data will be greatly enhanced. Astronomers, too, will welcome the eventual possibility of placing their telescopes and other instruments beyond the blanket of the Earth's atmosphere, which seriously hampers almost all observations, even from regions of cloudless skies. Astronomy is, of course, no purely academic study; it has been the nursery of many practically useful discoveries and inventions, from navigation to the thermonuclear reactions.

It is very likely that the end of this century will see permanent satellite observatories of various types, circling in different orbits beyond the atmosphere. It is interesting to speculate on what new knowledge in physics might emerge from experiments in the gravity-free and airless conditions of outer space.

Further away in the future, but not by any means inconceivable, is the possibility of Earth's one day receiving other material benefits from the rest of the solar system. Our descendants of a few centuries hence may be very interested in imports from the Moon and Mars. However, we can no more usefully speculate on these things in any detail than could the 15th century mariners on the products of the New World. Like them, we have to get there first.

Some of the effects of the new knowledge which the rocket can help us to gain have already been mentioned, even apart from its material results and its applications to new or existing fields of technology. Physical and astronomical observations made out in space may give us some new understanding of the structure of matter and the laws of the universe. The history of science affords many examples of theories and discoveries which have profoundly affected the consciousness of all civilized men, ever since the times in which they were made. They have altered the perspectives of human society and the whole attitude of men toward themselves and their environment. The changes in our thinking which followed the Copernican revolution in astronomy, or Darwin's work on evolution, or Freud's ideas on psychology are cases in point.

Argument by analogy can never be conclusive and, in any case, as already observed, history never exactly repeats itself. However, it is hard to avoid drawing the comparison between our potential ability, within the next few decades, to make a beginning on the conquest of space, and the adventurers of the first Elizabethan Age who first crossed the wide oceans. Even the natives of Polynesia made their outrigger canoes and crossed the vast Pacific

from one little island to another. So also, sooner or later, man must build his ships to explore the immensity of space and the many strange worlds which it contains.

Conclusion

It can be certain that the eventual implications of rocket propulsion extend far beyond any considerations of supersonic aircraft and guided missiles.

Indeed, it is hardly an exaggeration to claim that in their full potential these implications may be as far-reaching as those of any other idea or development which can be found in the entire present field of human activity. Our times have produced too many examples of great innovations for which the world has been quite unprepared by adequate prior consideration of their implications; usually we have been skeptical of their importance and have discovered otherwise to our cost.

Quickening the Army System

Digested by the MILITARY REVIEW from a copyrighted article by Major General B. T. Wilson in "The Army Quarterly" (Great Britain) July 1956.

The amount of paper that is required to produce even quite small results is terrific.
—Field Marshal Bernard L. Montgomery

THE formalism of World War I in Europe made the typewriter and the duplicator almost as important as machineguns. For every "zero day" they churned out wads of memoranda, instructions, and orders. The curse of paper came upon the army and has been with it, more or less, ever since. In itself the exactness which the printed word confers is laudable in military affairs, but there must be scope for it. Unhappily the best ordered battles are inevitably scenes of great confusion. Correct action becomes more important than the letter of written orders.

Between World Wars I and II the formalism of orders in great detail continued. Commanders of troops in those days will remember the feelings of despair with which they so often listened to the ritual of the orders group. At the platoon it was almost intolerable. The commander faced with the capture of a small feature first made quite a lengthy reconnaissance. Then he went through the appointed rigmarole of verbal orders to his section leaders; as he did so he often quoted whole chunks of the original divisional order.

The only part of the performance which was any good was some routine at the very end which at last got the attack on the move. The procedure at platoon had already taken place at company, battalion, and brigade headquarters so the ritual of orders took an unconscionable time. Even on peace training, results never came up to expectation. Much of the procedure was, of course, sheer waste of time and bore no relation whatever to the urgency of war.

A Slow System

The experience of World War II should have improved the technique of orders far beyond the dismal standards of the 1930's. Yet well-informed critics declare that it is still slow and labored. Peace exercises carried out since 1945 seem to confirm their opinion. This is a serious failing, since operation orders and procedures are the prescription for victory.

Compare the uniform ineptitude from

top to bottom of the British military setup during the Crimea. It creaked at every joint like an old man and moved with incredible slowness. Only the gallantry of the troops saved England from disgrace.

Even in peacetime a sense of urgency should pervade military preparations. Modern war is said to brew up slowly and give ample warning of its approach, but the brewing of armies is slower still. Thus time is always at a premium—in war this is obvious. In peace the factor of time is often forgotten. A dire example of governmental disregard of time was the bland directive of the 1920's that no war was likely for 10 years—whereupon the Royal Air Force got behind the clock with its provision of modern aircraft, the Admiralty proceeded to ax its middle-piece officers, and the army stopped developing tanks. Marking time instead of marching steadily on eventually cost the country thousands of lives, thousands of millions of pounds, and almost irretrievable disaster.

Great Britain today is not defying time in this crass way, nor is she being pennywise in defense matters. The present defect is that the army system works too slowly.

Slowness is not by any means a new phenomenon. It is a besetting weakness of the British race. The continental view of British troops, when at their best during the Napoleonic wars, was that they were not apt in the attack but were as difficult to defeat as any in Europe.

If this dictum is true today, as it probably is, lack of aptness in the attack is not a fault which can be lightly condoned, nor is it now enough for an army to be difficult to defeat. In all conscience, the Germans were difficult enough to defeat during 1939-45: it did not save them from the abyss. The new techniques of war cry out for speed; a military system which tolerates any kind of *avoidable* delay is dangerously out of date.

Reduce Delays

We assume that the organization and the weapons, the doctrine, and the training of the army are, in the main, good and sound. Granted this not untruthful assumption, how can the whole entity be made to work quicker?

The remedies are mostly as old as the hills. The mischief is that the men at the top do not apply them.

Changes nowadays must be brought about not by violent upheavals but from inner conviction and action by all. What the army seems to require is not a laboring Hercules but a modern Cato with a single reiterated exhortation: "Whatever you have to do, make it simple and make it quick."

Cato could not destroy Carthage by himself. By the iteration of *delenda est Carthago* he persuaded the entire Roman Senate that the future of Rome depended on the action which he so repeatedly demanded. Our modern Cato must, in similar fashion, convince all—repeat, all—officers and men of the army that the enforcement of his injunction is the necessity of all other necessities.

Sign of Uncertainty

The touchstone: "Is it simple? Is it quick?" if used diligently throughout the army would soon spell death to all kinds of redundancy. Nothing would speed up the machine more than the removal of dispensable offices. Every such office contains industrious officers and men who are helping to clog the mechanism with paper "half of which no ordinary man can read: I doubt if the other half is worth reading." The very existence of this spate of paper is itself a sign of uncertainty.

Without some measure of confusion how else would the "empire builder" and the tiresome crank exist?

Life for most staff officers, even in peace, is easier and less tied than that of regimental officers. Formation com-

manders, who are closer to the troops, usually know the weakness well enough. Therefore, they must resist tooth and nail any addition to their staffs which, although useful, is not really necessary. The smallness and not the largeness of their staffs should be their pride.

Directors of departments and, in general, all men in authority should similarly be absolute for making their bit of the great machine as "simple and as quick" as possible. They, too, should thin out their procedures and their offices as resolutely as the battalion commander, the whipping boy of the army, weeds his list of "special duty" and "detached" men. Only they have the knowledge to do it.

Action throughout the army based on the broad motives of simplicity and quickness would, without any doubt, cause the machine to work more easily. As it accelerated, the temptation to create new installations and offices would grow less. These are, as often as not, only despairing efforts to short circuit the labyrinth of routine. Successful at first, new offices beget others, so that in the end the labyrinth is more of a maze than ever.

New Techniques

Many will here declare with some heat that science and the new techniques of war must be served. Nothing is more important, but let them be served as simply and as quickly as possible. This means that the new techniques should not be taught to the army until they are properly ripe. The troops only require the "know-how" and rule of thumb of everyday practice. The scientists and their installations need produce only these and the new weapons to which they refer. The mysteries of physics and chemistry can be left to those who understand them. For the troops a smattering of such knowledge is certainly useless and possibly dangerous.

In the past, for instance, the chemistry of gas warfare received too much attention. All that the average soldier required to know was how to put on and work in his gas mask. When his five senses or some established alarm system warned him that it might perhaps be good to put on his gas mask—he did so. Between the wars excessive time was spent on the refinements of chemical warfare. That type of technical embroidery is not necessary.

The schools of the various arms with the officers and noncommissioned officers of units should suffice to teach the troops all the combat techniques which they require to know. Training inspectors can check the results of such instruction. Extraneous experts teaching detail should never be necessary.

Professional soldiers must, of course, not be content to soldier on cheerfully through the years with the ABC of military knowledge which they picked up in their youth. As general practitioners of the military art they must keep themselves right up to date. If they do so, they will be able to teach their men new methods with very little assistance.

The native wit and intelligence of a nation at war, if fully developed, may put the enemy to great disadvantage. Commanders, especially the brilliant and forceful ones, must learn the difficult art of not interfering with their subordinates. Every individual, right down to the corporal, must get as much scope for initiative as possible. The machine will then develop its full horsepower.

Brief Instructions

To this end all varieties of orders should tend to be short instructions to men well versed in their jobs, rather than the detailed and rigid directions which are necessary for the guidance of the stupid and the ignorant. In operation orders the spoken word has recovered the importance which it had in the past. The conduct of war is an intensely personal matter. What a commander says and how he says it settles everything.

A great benefit of verbal orders is that to be effective they must be short. Brevity is the soul of wit. The written confirmation also should be brief. The recipient of a verbal order should not listen with half an ear simply because he will be able to pore over the order later.

The all-important verbal order, once accepted without objection, is absolutely binding. An officer who for one reason or another cannot work to verbal orders should not be allowed to rise to high rank. He is bound to be a focus of distrust and a waster of the time and the paper of the staff. *The confirmatory order cannot attempt to be a quasi-legal document drafted to defeat chicanery.*

Training

As the subordinate commanders and their troops get closer to the enemy they find themselves thrown more and more on their own resources. The crowd of ultracritical spectators, official and otherwise, who were accustomed to watching them at big exercises has vanished. When fighting is imminent they quite suddenly find themselves gloriously alone and free to carry out their orders without any interference. Seen thus the importance of simple orders is manifest.

However good and clear the orders are, the troops must know how to carry them out. For this their training must have been superior. No battalion, brigade, or division ever moved and fought to the best advantage without commanders who excelled at training. General O'Connor's XIII Corps (31,000 men), which destroyed the Tenth Italian Army (250,000 men) in North Africa in 1941, had for the most part been training for nearly a year. The Italian Army did not go in for higher training. It is highly dishonest to reckon that insufficiently trained formations will be effective in modern war.

Aptness for the attack depends much on the training of the forward troops, especially of the infantry. Every soldier should, therefore, have a clear idea of the simple form which is the prototype of nearly all tactics. This tactic, repeatedly emphasized, can be dinned into the minds of the troops. They will then all realize that their particular enemy will be first pinned down by fire and then destroyed from one or both flanks. If all subunits have this form firmly in mind, they can be set in motion quickly and simply.

Even the best higher training, however, is of a general kind and is at the same time particular to well-known training areas. Therefore, the rehearsal of a projected operation is of inestimable value. In the 1941 triumph against the Italians in North Africa, already mentioned, time was found to rehearse the long and complicated approach march which was the keystone of O'Connor's plan. In addition, the orders were brief and secrecy was complete. A maximum of preparation with a minimum of paper was the result.

Big exercises, such as those conducted by the British Army of the Rhine under the auspices of NATO, have their training value in bringing to all the participants something of the tension and excitement of real war. Undue publicity and huge crowds of critical spectators, however, usually cause the directing staffs to control the operations too tightly, lest there be muddles and political repercussions. As a rule the lessons gained from big exercises with troops of this kind are scanty.

War games, on the other hand, can be carried out with far less publicity and are probably more suited to modern conditions. They are also much cheaper. In them full rein can be given to trial measures for making the direction of war as simple and as quick as possible. It might be possible, after the conclusion of such a war game, to select the most interesting part of it for an exercise on the ground with troops.

Teamwork

The question of reliefs in modern war has not yet received the attention which it deserves. Foch, when generalissimo on the Western Front in 1918, was adamant for the principle, "No reliefs during battle." The results were sometimes unfortunate. The experience of 1939-45 showed that even the finest troops fade if they are not constantly relieved. The German Army in Russia in 1941 was run to a standstill because no system of regular relief was enforced. The strain of modern combat is so great that units and their equipment constantly require overhaul. Yet if they are rested well before the breaking point and their casualties are replaced, they soon recover their form.

When the United States Army was sealing off the Cherbourg Peninsula in 1944 it relieved attacking formations sometimes twice in a single day. The close terrain made it possible. The Soviets made a practice of throwing in echelon after echelon in quick succession, much in the same way. Skillful handling of reserves and reliefs will certainly add to the speed and momentum of a prolonged operation.

Allied to the question of reliefs is that of teamwork. The value of good teamwork is indisputable. Thus if a brigade group could fight as a team and be relieved as a team, it should touch the heights of combat efficiency. It would no doubt be wasteful in manpower, since the various parts of such a group would not suffer casualties at the same rate. Moreover, the artillery and the engineers often get pegged to the ground and cannot be moved readily. Nevertheless, the shock divisions of 1914-18 were handled much in this way with notable results. Armor and infantry could at least be welded into an unchanged successful team. A good and successful staff also should be kept together, even if, for one reason or another, its formations and units had gone elsewhere.

Conclusions

It can logically be concluded that:

The formalism and paper inherited from World War I still persist today.

The army system is, therefore, slow and labored, with the probable result that its troops would be slow in battle.

Inner conviction of the defect and action by all to correct it are necessary.

A modern Cato is required at the top with the watchword, "Make it simple and make it quick."

Redundancy must be ferreted out and swept away. Commanders must pride themselves on having a few rather than a multitude of staff officers.

The spate of paper is due to uncertainty; hold on to the old methods until the new ones are ripe for use.

Develop initiative everywhere by reliance on short instructions rather than long orders.

Orders are only formulae for action. Unless the troops are splendidly trained they will be uncertain and slow, especially when raw at the start of a war.

A maximum of preparation with a minimum of paper should be the aim of all training. Rehearsals are especially useful in this respect.

Timely reliefs and keeping good teams unchanged will maintain the momentum and morale of the army in the field.

The emphasis of this inquiry has been on the urgency of war and the consequent necessity for measures which are simple and quick. This is not to suggest for a single moment that thoroughness can be skimped to save time. Thoroughness in quick time should be the goal. Estimating the timelag inherent in every activity of war is one of the key skills of soldiering.

As a last word let it be remembered that the army is a service under discipline. Given the will and determination it can streamline its system more easily than other national undertakings and thereby set an example—which is sadly required.

BOOKS OF INTEREST TO THE MILITARY READER

AN INTRODUCTION TO PACK TRANSPORT AND PACK ARTILLERY. By Major Michael F. Parrino, United States Army Reserve. 155 Pages. Queensland Publishing Co., New York. $5.50.

BY LT COL SAMUEL M. PATTEN, *Arty*

With the fervent zeal of a legally trained enthusiast, Major Parrino has produced a well-documented volume with several appendices and an extensive bibliography.

His book is an introduction to the subject of pack transport and pack artillery. It describes the role of the mule in war and peace, past and present. Near the end of his book Major Parrino even projects his thoughts into the future to envision possible uses for pack artillery in peripheral and atomic wars.

The reader who is neither a pack transport specialist nor a pack artilleryman may find that the book is a little too much like the case history of a nearly extinct species, and that it is difficult to visualize the intricate packing procedures described in portions of the book. Other readers sometimes will get the impression that the author is writing in defense of the mule, pack transport, and pack artillery; that he is trying to document for posterity what he fears may shortly become a lost art.

It is precisely in this respect, however, that the greatest value of the book may lie. With only one understrength pack artillery battalion now on the active roles of the United States Army, pack artillery does, indeed, bid fair to become a lost art.

For those who someday may have to revive it, and for those who, in the mean-

Mule train of US Army's 4th Field Artillery Battalion (Pack) on recent field trip

time, may have to refer to it in studies or speeches, this book will be valuable as a direct and indirect source of material. For those who, like the reviewer, have served in the pack artillery, the book is a pleasant, sentimental journey home.

POPULATION GROWTH AND LEVELS OF CONSUMPTION (With Special Reference to Countries in Asia). By Horace Belshaw. 223 Pages. Institute of Pacific Relations, New York. $4.50.

THE TRANSPORTATION CORPS: MOVEMENTS, TRAINING, AND SUPPLY. United States Army in World War II. By Chester Wardlow. 564 Pages. Superintendent of Documents, United States Government Printing Office, Washington, D. C. $4.25.

BY LT COL ROBERT M. WALKER, *Arty*

Starting with the problems and requirements which resulted in the need for a separate Transportation Corps and its subsequent creation in 1942, and ending with postwar redeployment, the author makes clear the tremendous achievement of the corps solving the transportation difficulties they encountered.

The faults and mistakes of the Transportation Corps are scrupulously and honestly recorded as well as their major achievement—no interruptions in movements to theaters of war adversely affected military operations.

One of the handicaps suffered by those concerned with military transportation during the prewar emergency period was the lack of an adequate record of how the Transportation Service had functioned in World War I. The account given here should obviate a similar lack should the Nation again become involved in a major conflict.

THE GERMAN FIFTH COLUMN IN WORLD WAR II. By Louis de Jong. Translated from the Dutch by C. M. Geyl. 308 Pages. The University of Chicago Press, Chicago, Ill. $5.00.

BY MAJ FREDERICK A. SMITH JR., *Inf*

The early victories of the German Army in World War II were largely attributed at the time to the successful efforts of enemy agents that formed what was commonly called the German Fifth Column. This theme of espionage and intrigue, once advanced, grew out of all proportions to its actual state. It became a stark fear in the minds of European people that was actually more of a menace than any group of active agents.

This story examines in great detail and gives a well-documented picture of the German Fifth Column. This picture destroys the myth of betrayal and conspiracy which reportedly conquered Poland, Denmark, Norway, the Low Countries, and France. For the reader who is interested in the work of the German Fifth Column, this book packs much information between its covers.

GLOBAL LOGISTICS AND STRATEGY: 1940-1943. United States Army in World War II. By R. M. Leighton and R. W. Coakley. 780 Pages. Superintendent of Documents, United States Government Printing Office, Washington, D. C. $6.25.

BY LT COL RODGER R. BANKSON, *Inf*

Here is a meticulously documented and carefully generalized study of the logistics of ground warfare, covering the prewar mobilization period and the first year and a half of American participation in World War II. It is a smooth flowing and readable narrative which covers the logistical problems of the Army from the point of view of the high commands and staffs in Washington.

It quite objectively describes the buildup of the logistics system and the insatiable appetite of the enormous administrative machinery the Army developed in the course of the war. This book represents a tremendous achievement in weeding the critical information out of the great mass of records left by the war, and presenting it in a readable and usable form.

It will prove to be a valuable and easily used reference work and makes interesting reading whether or not the reader is deeply interested in logistics.

THE ART OF THE AQUALUNG. By Robert Gruss. 66 Pages. The Philosophical Library Inc., New York. $2.75.

MILITARY HERITAGE OF AMERICA. By Colonels R. E. Dupuy, United States Army, Retired, and T. N. Dupuy, United States Army. 794 Pages. McGraw-Hill Book Co., Inc., New York. $10.00.

BY LT COL WILLIAM H. H. MULLIN, *CE*

The authors of this volume, which contains a foreword by General Douglas MacArthur, state that the objective of their book is "to provide for all Americans a military history presented from the American point of view." They have succeeded admirably in doing just this.

The book opens with a discussion of the nature of war and an explanation of the principles of war, followed by a treatment of the nature of strategy, tactics, leadership, and military techniques—all designed to give the reader a better understanding of the problems which have confronted military leaders throughout history. It then discusses the evolution of military theory by citing examples of leadership from the careers of the "great captains of history" who shaped and brought about that evolution.

From there the reader is launched into a discussion of America's military strategy and tactics from the colonial wars of the 18th century through World Wars I and II and up to the completion of the Korean conflict. The important battles and campaigns of each are analyzed and explained. The authors do not neglect to include the economic, political, and social aspects which are tied so closely to the conduct of war. Nor do they neglect the impact of new weapons upon warfare—present and future. Their final chapter devotes itself to the lessons to be learned from past wars and their application to future military thinking.

This book is more than just interesting reading. The professional soldier will find it an invaluable source of material. The civilian reader will find it an absorbing treatment of American military history.

A MILITARY HISTORY OF MODERN CHINA: 1924-1949. By F. F. Liu. 312 Pages. Princeton University Press, Princeton, N. J. $6.00.

BY MAJ HARRY H. JACKSON, *Inf*

The author of this military-political history of China's armies was a former officer in the Chinese Nationalist forces and is currently a research scientist in the United States. He traces the rise of Chiang Kai-shek and the Whampoa officer group who dominated China's military structure during this era. The paramount political position of this group in the destiny of China is evidenced throughout the work. In discussing the political aspects of China's military organization the author develops many of the problems inherent in military control of politics and civil economy when this control is ineffectually administered as was the case, according to Dr. Liu, in Nationalist China. The descriptions of military operations are generalized.

Of great interest is the discussion of the Soviet, German, and United States military missions which operated in China. The varying effects of these missions on the Chinese are contrasted and described and should be of great value to anyone making an effort to evaluate the military strengths and weaknesses of China's armed forces. The senior military personnel who made up these missions were such soldiers as the German Generals Von Seeckt and Von Falkenhausen; the Russians Zhukov and Blücher; and the Americans Stilwell and Wedemeyer. These prominent officers give some indication of the dramatic impact of their ideas on Chinese military thinking. The description of the Chinese attitude toward these various foreign military advisor groups should make this book vital reading to those who are participating or plan to participate in any military relationship with the Chinese.

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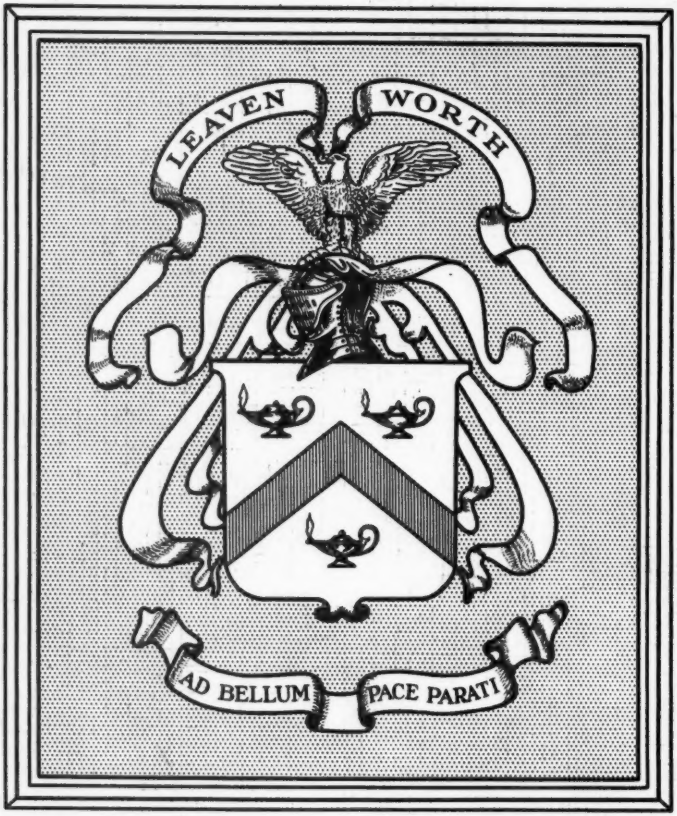

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